NEVADA DEPARTMENT OF WILDLIFE

2006-2007 BIG GAME STATUS

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NEVADA DEPARTMENT OF WILDLIFE

2006-2007 BIG GAME STATUS

This Program Receives Federal Aid in Wildlife Restoration
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BIG GAME STATUS

STATEWIDE SUMMARY

MULE DEER

Statewide 2006 post-season mule deer survey effort was a substantial increase over the past few years with over 23,000 deer classified (short-term average since 2001 was only 9,000 deer). The 2007 spring aerial survey effort of over 25,500 deer classified is comparable to most years since 2001. The long-term (1980 – 2000) statewide aerial sample size for post-season surveys was well over 30,000 deer and for spring aerial surveys, typically over 35,000 deer were classified each year. The 2006 post-season surveys resulted in a statewide average ratio of 32 bucks/100 does/58 fawns or 43 fawns/100 adults. This fawn ratio was a 23% increase in fawn production compared to the 2005 ratio. The spring fawn ratio was 35 fawns/100 adults which is comparable to the last 2 years and higher than 31 fawns/100 adults that was measured from 2001 – 2003. The 2007 fawn recruitment will allow for limited population growth and the resulting yearling bucks will continue to fuel the already strong mature buck segment in the herds

The 2006 post-season statewide buck ratio of 32 bucks/100 does is the highest ever observed during an aerial survey in Nevada. You have to go all the way back to 1964 and 1965 when ground surveys were conducted to find a higher post-season buck ratio (35). This high buck ratio supports a few key points: NDOW was confidently tracking herd estimates, recruitment, mortality and harvest rates with only limited post-season surveys since 2001; quota recommendations were appropriate in relation to the available bucks; and more hunting opportunities could have been provided while still maintaining ample mature bucks in the herds.

Nevada's mule deer herds continue in the short-term to provide increased hunting opportunities along with increased hunter success and continued strong antler point-class in the harvest. Approximately 8,346 mule deer were harvested by 18,167 deer tagholders in 2006 based on a 96% return rate of deer tag hunt questionnaires. It is seldom recognized or forgotten that Nevada has the highest hunter success rates for mule deer hunting in the west. In 2006, over 45% of all hunters who drew or purchased a deer tag in Nevada were successful. In addition, the percent of 4 point or better bucks of the total buck harvest continued to be 40%; a statewide value that no other western state can match. The reward of maintaining quality mule deer hunting continues to bring increased demand from Nevadans but even more so from nonresidents in getting in line to draw a coveted Nevada mule deer tag. At the same time, huge sacrifices have been made by sportsmen who are unsuccessful in drawing a deer tag each year. In 2006, over 31,500 sportsmen (residents, nonresidents, and juniors) or 63% of all deer tag applicants were unsuccessful in drawing a deer tag.

Even with so many positive notes from last year's mule deer surveys and hunting seasons, the negativity of the 2006 catastrophic fires that ravaged western Elko County will continue to leave deep and long-term scars on the landscape. The over 660,000 acres burned will further decrease the carrying capacity of Area 6 deer herd's already devastated winter range. Serious and large-scale habitat degradations statewide continue to plague both deer summer and winter ranges for many mule deer herds with only limited recognition of the true underlying causes by sportsmen, land management agencies and political leaders of this state.

PRONGHORN ANTELOPE

Pronghorn composition surveys conducted during 2006 resulted in the classification of 7,448 pronghorn, yielding a ratio of 42 bucks/100 does/45 fawns. In comparison, the 2005 statewide composition survey resulted in the classification of approximately 8,600 pronghorn with a ratio of 40 bucks/100 does/47 fawns. Results from the last 2 years of survey efforts indicate generally high post-season buck ratios and above-average fawn production rates. The statewide adult population estimate increased from 21,500 pronghorn in 2006 to 23,500 animals in 2007. Total statewide pronghorn population numbers continue to increase and are near the goal of 25,000 pronghorn statewide by year 2013 set in the Nevada Pronghorn Species Management Plan. This is the highest recorded population in the history of Nevada and is reflective of above-average production and recruitment rates observed over the last several years. The only regional exception to these increases appears to be occurring in the central portion of the state where fawn ratios have been depressed over the last several years.

NDOW continues to work with land management agencies to secure sites to establish or augment pronghorn herds to further restore pronghorn to their historic distribution and prominence in Nevada. During the winter of 2006-07 Department biologists removed approximately 190 animals from winter ranges in Management Area 6 and relocated these animals to suitable sites in Management Areas 18 and 20 in Churchill and Mineral Counties. As pronghorn populations increase within the state there will be more opportunities to establish or augment populations using in-state sources of pronghorn. The Department continues to be active in securing and developing water sources for use by pronghorn and other wildlife species.

ROCKY MOUNTAIN ELK

The sale of 2,350 elk tags in 2006 resulted in the harvest of 1,161 elk (49% success) compared to 2,616 tags sold in 2005 and a harvest of 1,247 elk (47% success). A tag sale decrease of 10% in 2006 resulted in only a 7% decrease in elk harvest. Bull tags were decreased 2% from 1,154 tags sold in 2005 to 1,126 tags sold in 2006. Bull harvest decreased approximately 9% from 724 bulls killed in 2005 to 662 bulls killed in 2006. The 2006 bull harvest followed a record bull harvest in 2005. Cow tags were decreased 15% from 1,462 tags sold in 2005 to 1,244 tags sold in 2006. Antlerless harvest only decreased 5% from 523 antlerless elk in 2005 to 499 in 2006. The percent of 6-point-or-better bulls in the total 2006 statewide harvest by all hunters was the same high value of 71% compared to 2005. Harvest strategies are designed to maintain population objectives identified in elk sub-plans with a combination of bull harvest and intensive cow harvest. In units where elk populations are below objectives, elk harvest management is designed to allow those populations to increase.

The White Pine technical review team (TRT) is nearly finished with the revision of the White Pine County Elk Sub-Plan. For the Wells Elk Plan Area in eastern Elko County, a private contractor was hired to monitor vegetation use by ungulates in compliance with monitoring recommendations outlined in the elk sub-plan. Preliminary indications from the draft report are that elk are not causing any obvious vegetation utilization problems at current densities now that the herd has been at the population objective for two years. The number of landowner elk-incentive tags increased from 49 sold in 2005 to 72 in 2006. There were 54 bulls killed by the 72 incentive tag holders including 39 in rifle seasons, 7 in muzzleloader hunts and 8 in archery seasons. It is estimated that with tags selling near an average of $10,000 each, the Department's Elk Management on Private Lands Program should have generated approximately $700,000 for private landowners this past year. The program continues to expand in numbers of interested applicants enrolled.

A total of 6,053 elk was classified during aerial winter composition surveys. The statewide elk herd composition ratio was 33 bulls/100 cows/47 calves compared to the previous year when 4,705 animals were classified, yielding a ratio of 22 bulls/100 cows/41 calves. Calf recruitment improved over last year and provided an increase in the overall state elk population estimate in spite of aggressive cow elk harvest that has been implemented to keep elk herds at or below population objectives where needed. The 2006 statewide spring adult elk population estimate is approximately 15% higher than last year with 9,400 elk estimated compared to 8,200 last year. Nevada’s elk harvest management continues to be based on meeting population objectives within the guidelines of the state’s Elk Species Management Plan. More individual elk herds are reaching population objectives each year resulting in increased elk quota recommendations designed to keep herds within objectives. Precipitation totals for the current water year are below average and may pose challenges related to elk management this coming year. Hunters lucky enough to receive an elk tag for 2007 should experience great hunting with good availability of mature bulls in our overall healthy elk populations statewide.

DESERT BIGHORN SHEEP

The statewide desert bighorn survey in 2006 classified 3,492 animals. The calculated lamb ratio of 44 lambs/100 ewes indicates that recruitment was good enough for continued statewide population growth. The 2007 statewide desert bighorn population estimate is the highest ever recorded at 6,200 animals. A large amount of credit for this achievement lies within past and present NDOW biologists working along with dedicated, passionate, and active sportsman's conservation organizations.

Nevada has surpassed all other states in providing quality desert bighorn hunting opportunities. A record number of 154 tags was issued in the 2006 Nevada desert bighorn hunt. Hunter success continues to be high at 92%. Hunters averaged 5.5 days hunting in the field. The statewide average age of harvested rams rose to 6.7 years with an average B&C score of over 152 points.

Restoration efforts of bighorn sheep populations into historic Nevada ranges continued this past year with desert bighorns being released in the Grant Range of eastern Nye County and the Virgin Mountains of eastern Clark County. To support repatriation of desert bighorn sheep throughout its historic North America range, captures in the Sand Springs Range of Churchill County, Nevada were provided to Utah Department of Wildlife Resources.

CALIFORNIA BIGHORN SHEEP

Aerial surveys were conducted for California bighorn in virtually all occupied ranges during 2006. A total of 749 sheep were classified as 223 rams, 334 ewes and 192 lambs for a ratio of 67 rams/100ewes/57 lambs. An intensive aerial survey was conducted in the Santa Rosa Mountain Range in Unit 051 because of concerns related to the health of recently transplanted sheep in the Martin Creek Drainage. All three subpopulations were surveyed and relatively good samples were obtained. Overall, this survey resulted in the classification of 125 sheep with high ram and lamb ratios indicating that concerns about the health of this population were unfounded. Based on recent surveys in the Santa Rosas it appears that this population is rebuilding from a significant die-off that occurred fall/winter 2003. Plans continue for a winter 2007 augmentation of the north end of the Virginia Mountains in Unit 022 in an attempt to bolster this small herd of bighorn. Bighorn herds in both Washoe and Humboldt County continue to expand in both number and distribution, especially in Unit 012. Optimism continues for herd recovery in the Granite Range with the recently released bighorns on the south end of the range, along with steady growth of the Negro Creek sub herd in Unit 014.

Recent survey efforts and hunter observations in the Sahwave Range of Unit 041 have not been encouraging. Only 7 total bighorn were observed by NDOW biologists during survey efforts. This herd was one of only a handful of populations known to pioneer and restore themselves into historic unoccupied habitat beginning in the late 1980's. Since that time hunters have been extremely fortunate to harvest 9 rams out of this population including the new state record California bighorn ram. Given the low number of sheep that are known to exist in this population NDOW has closed the bighorn hunt in this area. The 2007 estimated statewide population of California bighorns is 1,700 and represents a 6% increase from last year's estimate. This is truly remarkable considering these bighorn populations totaled less than 500 in 1990.

ROCKY MOUNTAIN BIGHORN SHEEP

Rocky Mountain bighorn sheep populations remain stable to slightly increasing. In Unit 074, the Badlands, a small sample was obtained in 2006-2007 incidental to deer/elk surveys. The 074 sample contained 12 rams, 2 ewes, and 1 lamb. Mid-winter aerial and ground surveys in Units 101 and 102 resulted in the classification of 255 bighorns, indicating a ratio of 63 rams/100 ewes/37 lambs. One of the most encouraging signs from recent surveys is the large number of young rams observed in both Units 101 and 102. In March 2007, a survey sample of 98 animals in Unit 102 revealed a winter lamb ratio of 50. The recently augmented population in Unit 114 was also surveyed and 72 animals were observed with ratios of 67 rams/100 ewes/73 lambs. Hunters will soon be realizing the increased opportunity in Unit 114 as the first tag since 1991 will be issued in this unit in 2007. Increased production of lambs, significant numbers of young rams, and the recently augmented population of Rocky Mountain bighorn sheep on Mount Moriah all indicate a positive future for Rocky enthusiasts. However, recent interest in domestic goats for meat production and weed control has grown considerably. As the number of domestic goats increases in this area, so does the potential risk of disease transmission. Numerous estray goats have been observed in both Unit 101 and Unit 102 and the disease risk from the presence of these animals should not be overlooked. Hunters who encounter estray domestic goats or observe any

abnormal animal behavior, are encouraged to notify the Department of Wildlife and the Department Agriculture.

The 6 Rocky Mountain bighorn sheep tags issued in 2006 equals the highest number of tags issued for this subspecies (2003, 2004 & 2005). Five of the 6 hunters were successful and harvested rams averaging 7 years of age and with an average B&C score of 170 7/8. Interestingly, the largest animal harvested, a new state record at 190 5/8 was only five years old and was from Unit 101. The only unsuccessful hunter reported spending 6 days in Unit 102.

All population indices are encouraging and the lucky tag applicants who draw a 2007 Rocky Mountain bighorn sheep tag should have an experience of a lifetime pursuing this magnificent animal. This tag is the most highly sought-after resident big game tag in Nevada with over 500 applicants for every tag sold.

MOUNTAIN GOAT

The mountain goats of the East Humboldts and Ruby Mountains continue to do well. Over the last few years, we have witnessed dramatic increases in the opportunity to hunt this unique trophy species. Despite the increased opportunity, we continue to have very high hunter success rates (90% - 2006, 85% - 2005, 83% - 2004). Even with the significant increases in tag numbers over the past five years, we continue to maintain a high average age of harvested animals (about 5 years) in Units 101 and 102. In 2004, biologists detected a fourth consecutive year of decreasing average age (3.2 years) of harvested animals in Unit 101. Accordingly, 2005 and 2006 quotas were reduced. Harvest results from 2005 showed a slight increase in average age (3.5) and harvest results from 2006 demonstrate further recruitment of mature animals in Unit 101, with an average age of harvested animals at 5.0 years of age. Although sample sizes were reduced due to time and weather constraints, Unit 101 continues to exhibit marginal recruitment with 30 kids per 100 adults while Units 102 was much higher at 44 young per 100 adults. Unit 103 (20 kids/ 100 adults) dropped substantially from the previous year as would be expected following a year with high kid production due to the abundance of non-reproductively mature yearlings in the population. Hunter success, hunter days, average age of harvested animals, hunter reports, and Department observations all indicate the populations remain large and stable. However, recent interest in domestic goats for meat production and weed control has grown considerably. As the number of domestic goats increases in this area, so does the potential risk of disease. Numerous estray goats have been observed in both Unit 101 and Unit 102 and the disease risk from the presence of these animals should not be overlooked. Hunters who encounter estray domestic goats or observe any abnormal animal behavior, are encouraged to notify the Department of Wildlife and the Department Agriculture.

MOUNTAIN LION

Nevada's mountain lion hunters tagged 134 cougars during the 2006-07 season, a 16% increase compared to the previous year. The total is also similar to the preceding five-year average of 139 but well above the long-term average of 107. For a second consecutive year the depredation harvest amounted to 19 animals, slightly less than the preceding five-year average of 21 but below the long-term average of 26 lions. Depredation harvest in Nevada was greatest at the turn of the 20th century and in modern times lions killed for livestock protection peaked in the late 1980s and early 1990s, coincidental to the mule deer irruption. Since domestic sheep operators and the herds that they place on public lands had greatly diminished at the close of the 20th century and into this decade, calls for lion removal have trailed off. Much of the depredation harvest this year was not associated with domestic sheep grazing operations. The total sport harvest represents only 38% of the state's combined harvest objective of 349. All reported lion mortalities recorded from 1 March 2006 to 28 February 2007 amounted to 168.

The ratio of males to females in the total harvest declined this year. Toms comprised 57% of the total sport harvest, similar to the long-term average. This appears to be a short-term issue, as the trend toward males in the harvest continues to rise. Tag sales reached a record high this year with a total of 1,573 sold. Not surprisingly, hunter success dropped to 9% versus 10% last year and 17% for the long-term average. More people are participating and it is likely that a high percentage of these people,

especially Nevada residents, are buying tags in case they come across lions incidental to other hunting activities. Despite the increased interest and participation levels, there is no data to suggest that it has an impact upon the lion population.

Young lions, aged 2-3 years, comprised 57% of the total male harvest this year, compared to the preceding five-year average of 48% and the long-term average of 33%. Females of this same age group represented half of the total harvest. Unlike the male segment, the short-term average has been 55% but the long-term average is 44%. Since 1968, the average age of all lions killed in Nevada has remained static at about 4.5 years. The decrease in average age is a short-term anomaly that reached its lowest point in 2004 and has been increasing ever since. Nevada does not conduct formal composition surveys for lions and the harvest data is not a good source to interpret productivity rates. However, much anecdotal information about observed litters of cubs throughout the state has been disclosed in recent years to suggest that productivity is good. Accordingly, the proportionality of younger age classes in total harvest most likely is a reflection of that productivity rather than an indication of declining older cohorts. NDOW personnel assess the condition of all lions that the agency validates. This year, 126 (75%) of all validated lions were in very good or excellent condition.

WEATHER AND CLIMATE EFFECTS

Below are paragraphs for each part of the state describing how moisture, snow, and temperature effects both vegetation and big game herds along with Table 1 that summarizes snow pack and water-year precipitation from SNOTEL sites throughout Nevada and the surrounding water basins.

Central Nevada

According to data published by the Western Regional Climate Center (WRCC) central Nevada has suffered below average precipitation receipts since late spring of 2006. While a short period of favorable conditions occurred in May and April during the spring of 2006, below average precipitation throughout the remainder of the spring and through the summer negatively impacted range conditions over much of central Nevada. Summer precipitation is important in maintaining plant vigor and the nutrient content of forage species during the period when big game populations are preparing for breeding activity and the winter period. Unfortunately, other than another short reprieve in July, the summer of 2006 was very dry and likely resulted in animals entering the fall/winter period in less than optimal condition.

The dry trend continued in central Nevada throughout the fall and early winter periods of 2006 and into early 2007. Although the lack of significant snow accumulations should have allowed good over winter survival of animals, the resultant impacts to range conditions overall will likely have a negative influence on the vigor of big game populations throughout central Nevada as the herds enter the spring of 2007. According to the Natural Resources Conservation Service (NRCS) snowpack conditions in upper elevation basins in central Nevada were well below average as well. This will impact stream flows as well as forage quality and quantity in much of central Nevada's high country summer range for species such as elk and mule deer.

Southeastern Nevada

According to BLM precipitation data with 26 stations reporting, Lincoln County received an average of 87% of the previous ten-year average of precipitation between January and December 2006. According to WRCC/DRI, during 2006, Pioche and Alamo received 100% of average precipitation while Caliente received 69% of average precipitation compared to the short-term average since 2000. Since January 2007, approximately 64% of average precipitation has fallen in Pioche, while Caliente is over 118% of normal, and Alamo is lacking with just over 30% of average. October of 2006 was relatively wet, however, since that time Lincoln County has been mostly dry. Big game likely went into the winter in good condition due to favorable range conditions. Temperatures were colder than normal in December and January, which could lead to higher mortality rates for big game animals, however, moderate to low snowpack and open conditions may allow for good recruitment of young into big game populations.

Range conditions are moderate throughout most areas of Lincoln County. Warm and dry conditions prevailed through February and March. As usual, precipitation is varied across the landscape of Lincoln County with some areas near or above average while other areas are well below average. Spring rains can be a double edged sword in the southern ranges of Lincoln County. If those areas receive heavy spring precipitation, cheatgrass and red brome can build up heavy fuel loads which can allow wildfires to burn massive acreages during the hot summer months. However, without spring rains, those same areas may have dry water developments and little forage available for wildlife.

Southern Nevada (Mojave Desert)

In southern Nevada, dramatic reversals of environmental conditions have occurred within the last seven years. With few exceptions, wildlife populations endured severe drought for three consecutive years beginning in 2000 (2000-02). The National Weather Service Forecast Office (NWSFO) in Las Vegas, centrally located in Clark County, reported 2002 the sixth driest year on record.

Beginning in February 2003, environmental conditions greatly improved. According to NWSFO in Las Vegas, 2003 ranked the ninth wettest year on record after receiving 6.86 inches of precipitation. In 2004, moisture receipts exceeded those of the previous year such that 2004 ranked the fourth wettest year on record. The NWSFO reported 7.76 inches of precipitation in 2004 (173% of normal). Although rainfall amounts in Las Vegas trailed off late in 2005, moisture receipts earlier in the year, including the fourth wettest February on record, were sufficient to place 2005 the sixth wettest year on record.

In contrast to two succeeding wet winters (2003-04 and 2004-05), the recent winters of 2005-06 and 2006-07 were notably drier. Based on rain gauge data collected by Clark County Regional Flood Control District in cooperation with United States Geologic Survey and NWS, Las Vegas and outlying areas in Clark County experienced drier conditions from November 2005 through March 2007. Thus far in 2007, precipitation receipts have been low and generally distributed in mountain ranges at higher elevations and throughout the Spring Mountains.

In Las Vegas, temperature data collected since 1937 by the National Weather Service indicate each of the last seven years (2000-06) to be among the hottest years on record. The hottest month overall recorded was July 2005, followed by July months in 2003 and 2006. According to NWS, in a period of one week (latter half of July 2005), a total of 17 different temperature records were broken or tied including the second time Las Vegas reached 117 degrees.

Overall, big game populations in southern Nevada benefited from favorable environmental conditions from early 2003 to nearly the end of 2005. High precipitation receipts promoted germination and growth of nutritious and preferred forage plant species. With few exceptions, production and recruitment rates among big game populations were above long-term averages.

More recently however, big game populations have endured drought conditions. Reduced precipitation coupled with increased temperatures since November 2005 has resulted in relative scarcity of highly digestible, nutritious forage plant species. Some big game populations may be further stressed due to reduced availability of water at otherwise reliable springs, seeps and water developments. Unless drought conditions abate, it is anticipated many big game populations will decline as recruitment and adult survivorship rates decrease.

Western and Northwestern Nevada

It has been said that Nevada's long-term precipitation averages are built on extremes and the 2006-07 water year was certainly no exception to this adage. While no records were set, the northwestern portion of the state witnessed very few significant snowfall events and subsequent stream and spring flow forecast values were similar to those observed during the drought years of the early 1990's. As of 1 April 2007 snow pack values for the northwestern portion of the state range from 31 to 50 percent of average. This compares to snow pack values of 118 to 149 percent recorded during the 2005-06 winter. Overall

precipitation values, although slightly higher, also remain well below average and range from 39 to 56 percent of an average year for sites within the northwestern portion of the state.

General range conditions benefited from above average precipitation received during the previous winters of 2004-05 and 2005-06. Shrubs that are critical forage for mule deer were showing signs of improvement and grass and forb production important to all big game species during the spring and early summer months were abundant. This trend, at least for this year, has now been reversed. Big game and most other wildlife species will find water less available during the upcoming summer months and forage will be less nutritional and is shorter supply.

Northeastern Nevada

Although the previous 2 winters experienced above-average snow pack and precipitation levels throughout northeastern Nevada, the 2006-07 winter fell short of average. Snow pack levels and moisture content was well below the long-term average for the Ruby Mountains and adjacent mountain ranges. As of 1 April 2007, the precipitation total for the current 2006-07 water-year stands at 85% in White Pine County. There were at least 2 weeks of sub-zero weather in mid January throughout the Eastern Region. Fortunately this sub-zero weather was combined with below average snow depths, so other than high fawn mortality in Area 6 where deer had to migrate through large burned areas with little or no forage, most big game populations in northeast Nevada came through the winter in good condition with near average recruitment rates.

Last year fire danger was predicted to be high because of the above average precipitation and extensive plant growth that resulted in high fuel loads and this year fire danger may be relatively high due to early drying of the range and the possibility of a dry summer.

It is anticipated that the range conditions this coming spring and early summer will be average at best depending on spring and early summer rains. Leader growth associated with shrub species such as bitterbrush, sagebrush, serviceberry and snowberry should only be fair and forb production may be lacking in 2007**.** Summer rain will be the key-determining factor whether plant vigor and productivity will be sufficient to enhance animal health going into the fall and winter months and into next year's breeding cycle.

TABLE 1. Water basin climate data from SNOTEL monitoring stations throughout Nevada and the Sierra Nevada Mountains for snow water equivalent of snowpack as of 24 April 2007 and total water year precipitation from 1 October 2006 – 24 April 2007 in inches (Natural Resources Conservation Service). Averages are based on data from 1971 – 2000.

BASIN		Snow Water Equivalent			Total Precipitation		
Data Site Name	Elev (ft.)	Current	Average	% of Avg	Current	Average	% of Avg
NORTHERN GREAT BASIN				**61**			**79**
Cedar Pass	7100	8.8	16.1	55	21.4	27.1	79
Dismal Swamp	6500	0	4.2	0	11.5	16	72
Disaster Peak	7000	19.7	26.5	74	31.9	39.8	80
Sheldon	5860				5.2	6.1	85
TRUCKEE RIVER				**47**			**68**
LAKE TAHOE				**34**			**69**
Marlette Lake	7880	4	20.5	20	16.9	28.5	59
Mt Rose Ski Area	8801	17.8	42.8	42	29	46	63
CARSON RIVER				**33**			**61**
WALKER RIVER				**50**			**60**
SALMON FALLS BASIN				**74**			**104**
BRUNEAU BASIN				**67**			**101**
OWYHEE BASIN				**37**			**92**
Jack Creek Upper	7250	9.1	19.4	47	20.6	21.9	94
Fawn Creek	7000	8.1	16.7	49	22.7	26	87
UPPER HUMBOLDT RIVER				**44**			**94**
Corral Canyon	8500	13.6	17.6	77	19.9	21.2	94
Dorsey Basin	8100	5.3	11.7	45	22.3	23.1	97
Green Mountain	8000	3.4	10.1	34	22.4	23.1	97
Lamoille #3	7700	1.2	9.6	13	19.9	22.9	87
Draw Creek	7200	0.5	5.1	10	14.1	14.3	99
LOWER HUMBOLDT RIVER				**46**			**76**
Big Creek Sum	8695	14.6	19.3	76	15.3	19.4	79
Granite Peak	8543	10.9	25.6	43	18.2	26.1	70
Buckskin Lower	6915	0	5	0	14.8	19.8	75
Lamance Creek	6000	0	5.2	0	17.9	21.6	83
CLOVER VALLEY				**17**			**102**
EASTERN NEVADA				**68**			**91**
Ward Mountain	9200	2.9	8.1	36	12	14.4	83
Berry Creek	9100	14.1	15.9	89	17.1	17.6	97
Diamond Peak	8033	0.5	1.8	28	14.9	16.5	90

BIG GAME HERD

STATUS REPORTS

MULE DEER

Units 011 - 015, Northern Washoe and Western Humboldt Counties

Report by: Chris Hampson

Survey Data

Management Area 1 is made up of five separate hunt units (011 - 015). Unit 015 is winter range for the Lassen/Washoe interstate mule deer herd that migrates into Nevada from California Hunt Unit X5B. A small resident herd exists in Unit 015 but most of the animals harvested during the deer season are migrates from this interstate herd. Deer residing in Units 011 – 014 are resident herds.

NDOW biologists conducted post-season surveys in Units 011 - 014. These surveys resulted in the classification of 597 mule deer that had an average composition ratio of 34 bucks/100 does/63 fawns. No data was available for this report from fall surveys conducted by California Fish and Game in Unit X5B and the western portion of Unit 015.

NDOW biologists conducted spring mule deer surveys in early March 2007 in all 5 units within Management Area 1. Due to the mild conditions throughout the winter of 2006-07, mule deer were not forced to concentrate on winter ranges and were found to be widely scattered throughout their transitional range. Despite the difficult survey conditions, sufficient sample sizes were obtained. A total of 582 mule deer were classified for a ratio of 47 fawns/100 adults. The comparison of survey data from the fall and spring indicates that there was little if any mule deer winter mortality in 2006-07.

Habitat

The winter of 2006-07 was extremely warm and dry. Habitat conditions have suffered due to the dry conditions. Very little green-up was available to mule deer for most of the winter due to the lack of any significant precipitation. According to the Nevada Water Supply Outlook Report published by USDA Natural Resources Conservation Service, as of 1 March 2007, most basins in Washoe County were well below average for both snow pack and water year precipitation.

Population Status and Trend

Mule deer population numbers remain at moderate levels compared to the high levels experienced in the early to mid 1980's. The carrying capacity for the Management Area 1 mule deer herds is thought to be lower today due to the loss or degradation of important mule deer habitat. Several factors have contributed to the loss of both the quality and quantity of mule deer habitat. Wildfires are a significant cause to these losses both in the past and more recently. Some of the devastating wildfires to occur within Management Area 1 include burns on Boulder Mountain in Unit 013, and the Barrel Springs and Sand Creek fires in Unit 011. Wildfires in the Granite Range of Unit 014 near Cottonwood Canyon and Negro Creek have also negatively impacted important habitats. Unit 015 has had numerous smaller fires but two large fires on the California side seriously impacted mule deer summer and transitional range for the interstate deer herd. Pinyon juniper encroachment is another major factor contributing to the loss of important deer habitat, especially noticeable during wet years. Important browse communities for mule deer no longer produce the nutritious high quality forage that they once did. Mule deer may never again reach the high population levels that occurred in the early to mid 1980's.

The mild conditions this past winter allowed for high survival of mule deer. However, unless significant moisture is received during the upcoming spring and early summer months, the dry conditions and lack of moisture will have a negative effect on key forage plants for mule deer and the amount of water available later this summer. Habitat conditions the past two years had been much improved following two consecutive good water years in 2004 and 2005. The 47 fawns/100 adults recruitment level observed this past spring is considered to be good recruitment for the Management Area 1 mule deer herd and will allow the populations to continue on an upward trend. The deer population estimate for Units 011 - 015 now stands at approximately 4,100 animals.

Units 021, 022, Southern Washoe County
Report by: Chris Hampson

Survey Data

Due to the extremely mild winter and the lack of any significant snow accumulations in California, only a limited number of mule deer migrated into Nevada Unit 021 to spend the winter this year. Although, it is possible that some of the mule deer from California may move into the western portion of Unit 022 during severe winters, the mule deer which inhabit the area are for the most part resident mule deer. Since a majority of the herd remained on the California side of the line throughout the winter of 2006-07; California biologists were able to classify good numbers of mule deer during their spring composition surveys in Units X6B and X7A. A total of 1,010 adults and 378 fawns were classified and resulted in a ratio of 37 fawns/100 adults. NDOW biologists aerial spring surveys in Units 021 and 022 classified 244 deer resulting in a similar ratio of 42 fawns/100 adults.

Post-season surveys are flown by California Fish and Game biologists because a majority of the deer herd generally resides in California during the fall and early winter. The November surveys in Units X6B and X7A resulted in the classification of 1,035 mule deer with a composition ratio of 17 bucks/100 does/44 fawns. Post-season surveys were not flown in Nevada units. Buck ratios on the California side of the line are generally much lower than those observed in Nevada.

Habitat

Although, the months of November and February were at or above long-term averages for monthly precipitation, the remainder of the fall and winter were extremely dry. November and January also set all time records for high temperatures. As of March 1, 2007 most basins in western Nevada were well below average for both snow pack and yearly precipitation totals. The dry winter will have a major effect on the amount of runoff and stream flow within the region. Springs and seeps may also see a reduction in flow due to the below average winter. Habitat conditions will worsen if the dry conditions continue into the spring and summer. Fortunately, the previous two winters were above average and will help to temper the impacts from the lack of snowfall in 2006-07. It now looks as though we may see a reversal of this trend in the upcoming year.

Browse communities that have been lost due to wildfires have generally been lost to cheatgrass invasion. However, the northern portions of the Virginia Mountains that burned several years ago are now showing signs of recovery. Young bitterbrush and sagebrush plants are becoming more evident in many areas of the burn. Over time, the young nutritious plants will provide good quality forage and thermal cover for mule deer, pronghorn and sage grouse that live in the Virginia Mountains.

Population Status and Trend

Management Area 2 deer herds should see a slight increase in overall numbers in 2007. However, new housing developments and other human related activities to the north and east of Reno/Sparks will continue to severely impact this herd over the next decade. Many areas where new housing developments are proposed are either adjacent to or directly on top of critical mule deer winter range. Past wildfires have seriously impacted important browse communities in the Peterson Range, Stateline Peak, Virginia Mountains and the Pah Rah Range. The habitat carrying capacity for mule deer within Units 021 and 022 is much reduced from what occurred historically.

Units 031, 032, 034, 035, Western Humboldt County
Reported by: Ed Partee

Survey Data

A post-season helicopter flight was conducted in November 2006. A total of 721 deer were classified in Units 031, 032, 034 and 035 and yielded a ratio of 56 bucks/100 does/70 fawns. Spring composition surveys

were conducted by helicopter during the middle of March 2007. A total of 1,104 animals were observed with a ratio of 44 fawns/100 adults.

Habitat

Management Area 3 received above average moisture during the winters of 2004-05 and 2005-06. Above average amounts of moisture received during these back to back winters recharged spring sources throughout Management Area 3 and improved forage production. However, moisture received during this past winter was well below average. Range conditions, including forage production and water availability, are expected to be well below normal during this upcoming summer and fall.

Humboldt County experienced three wildfires during the summer of 2006. Only two of these fires burned in areas occupied by mule deer and the amount of acreage lost was not critical to the overall dynamics of these populations. Generally Humboldt County has been extremely lucky over the last several years in that no large acreage wildfires have occurred. Large amounts of cheatgrass and other forms of vegetation produced from heavy precipitation received during the winters of 2004 and 2005 have created a huge wildfire threat during this approaching summer.

Population Status and Trend

A generally mild winter and an observed spring fawn ratio of 44 fawns/100 does has produced a slight increase in the overall deer numbers in Management Area 3. The 2007 pre-hunt population estimate is approximately 4,100 mule deer. At this time the limiting factor for this population is the amount of quality winter habitat that would be available during a heavy and prolonged winter.

The observed 2006 post-hunt buck ratio of 56 bucks/100 does may be skewed somewhat due to survey bias but it certainly points towards the fact that buck ratios have been maintained at relatively high levels despite the fact that populations are below historic highs.

Unit 033, Sheldon National Wildlife Refuge: Washoe and Humboldt Counties

Report by: Chris Hampson

Survey Data

A total of 354 mule deer were classified during the mid-November post-season survey. The composition ratio for the sample was 33 bucks/100 does/55 fawns. In 2005, 266 mule deer were classified with a ratio of 35 bucks/100 does/76 fawns. Mule deer were once again concentrated at the upper elevations and associated with the thick mahogany tree cover. Mule deer distribution on the Sheldon remained similar to past years.

Buck ratios dropped slightly from 2005 but have been very consistent and have averaged 34 bucks/100 does between 2004 and 2006. Due to the fact that the post-season survey generally follows immediately after the end of the hunting season, bucks can be more difficult to locate in the heavy tree cover. Actual buck ratios are believed to be slightly higher than those observed during post-season surveys.

Spring composition surveys were conducted in mid-March 2007. The usual winter range in Hell Creek and Sagebrush Creek was surveyed. Similar numbers of mule deer were observed despite the warm mild weather experienced this past winter and spring. A total of 102 mule deer were classified and resulted in a composition ratio of 52 fawns/100 adults. In 2005, 106 mule deer were classified with a ratio of 58 fawns per 100 adults. This is considered very good recruitment for the Sheldon herd.

Population Status and Trend

Deer numbers on the Sheldon are increasing and the population has experienced an upward trend since 2003. Recruitment data has averaged 46 fawns per 100 adults over the last four years. Another strong recruitment year in 2007 will allow for further herd growth. Overall, deer numbers remain below the highs experienced during the late 1980's and early 1990's. Critical deer habitats on Badger Mountain, Catnip

Mountain, and in the Devaney and Alkali Peak areas of the Sheldon have suffered extensive damage from wildfires over the last few decades. The habitat that was burned in these fires is estimated to represent approximately 40% of the best mule deer summer range that existed on the Sheldon. It may take decades for the important bitterbrush and sagebrush communities to return to these burned sites. The loss of habitat has led to a reduction in the overall carrying capacity for the Sheldon mule deer herd. The 2007 Sheldon herd estimate is 1,600 animals.

Units 041, 042, Western Pershing and Southern Humboldt Counties

Report by: Kyle Neill

Survey Data

A limited one hour aerial fall mule deer survey picked up only 18 mule deer in the Eugene Mountains, Unit 042 on 17 November 2006. This survey resulted in a ratio of 62 bucks/100 does/62 fawns. Subsequent fall mule deer surveys were conducted in conjunction with aerial bighorn surveys in Unit 041 on 25 January 2007. Areas surveyed included the Sahwave Range, Bluewing Mountains and the Selenite and Nightingale Ranges. A total of 51 mule deer were observed with age and sex ratios of 48 bucks/100 does/41 fawns. Most of the deer were located in the upper elevations of the Selenite Range. These 2 surveys combined classified 69 animals. The computed ratio was 51 bucks/100 does/46 fawns. This fawn ratio is 22% below the 5-year average of 59 fawns/100 does.

Spring composition surveys were conducted from the ground during the third week in March 2007. Areas surveyed were the Selenite, Seven Troughs and Trinity Ranges. Due to limited fall and winter moisture, most of the deer observed were located on green up on high elevation north slopes. A total of 40 deer was classified with a composition ratio of 33 fawns/100 adults. The 2007 spring fawn ratio is below the 5-year average of 43 fawns/100 does and represents only maintenance level recruitment.

Population Status and Trend

The 2007 mule deer population estimate for Units 041, 042 is 850 animals, similar to last year's estimate. Western Pershing County's mule deer herds are showing a stable population trend. Indicators of this stable trend are as follows: maintenance-level fawn recruitment, 53% hunter success rate for 2006 resident rifle hunters, and a 42% harvest rate of 4 points or better bucks.

Despite receiving below average winter precipitation, spring range conditions are thought to be good in the upper elevations of the unit group's ranges. However, if adequate spring and summer moisture is not realized, forage condition will deteriorate rapidly.

Units 043 - 046, Eastern Pershing and Southern Humboldt Counties

Report by: Kyle Neill

Survey Data

On 17 November 2006, a 6-hour aerial fall mule deer survey was conducted in Units 044, 045 and 046. Unit 043 was not surveyed due to unfavorable weather conditions. Despite difficult survey conditions, a total of 482 animals were classified with age and sex ratios of 34 bucks/100 does/59 fawns. Both buck and fawn ratios were near their 10-year averages of 32 bucks/100 does/63 fawns.

Aerial spring composition surveys took place on 17 and 18 March 2007 in Units 043-046. Areas surveyed included the Sonoma, Tobin and East Ranges and the east side of the Humboldt Range. Green-up on north slopes was occurring at a higher elevation than what is traditionally observed. A record spring sample of 647 mule deer was classified during 6 hours of survey time. This sample provided a composition ratio of 55 fawns/100 adults. The 2007 spring fawn ratio is similar to the 2004-2006 fawn ratios of 50, 48 and 52 fawns/100 adults, respectively.

Habitat

Only one significant wildfire occurred in Unit 045 and 046 in 2006. The Smelser fire (located between China and Buffalo Mountains) burned an estimated 4,507 acres. BLM drill seeded 300 acres with a sagebrush mixture. Mule deer use in the Smelser Pass area is low and generally occurs in the winter.

Population Status and Trend

Eastern Pershing County's mule deer population is showing an increasing trend. This herd has been increasing since 2004. Evidence of herd growth includes 4 consecutive years of high fawn recruitment, an increase in spring survey sample size with less survey time expended and an increase in the resident hunt 1331 any legal weapon hunter success rate over the last 3 years. The 2006 resident hunt 1331 success rate was 72%, which is identical to the 1994 success rate and is the highest success rate ever recorded for this unit group. Also, the Department has been receiving more requests for compensation tag counts on both sides of the Humboldt Range, which further confirms herd growth.

This herd is relatively young and rebuilding in age structure from what was observed throughout the mid to late 1990s. Wildfires that occurred in 2000 and 2001 converted many of the lower elevations around the unit groups ranges into annual grasslands, which contributed to a decline in older age class animals and population trend. Presently, much of the habitat has recovered in the upper elevations while annual grasses still dominate the foothills. Overall, it is believed that poor to average winter range conditions may eventually limit this herd.

Unit 051, Santa Rosa Mountains: Eastern Humboldt County

Report by: Ed Partee

Survey Data

A post-season helicopter flight was conducted in November 2006. A total of 379 deer were classified with a resulting ratio of 44 bucks/100 does/77 fawns.

Spring composition surveys were conducted in March 2007 and resulted in the classification of 600 deer which is near the 5-year average sample size. The ratio for this survey was 47 fawns/100 adults.

Habitat

There was no additional loss of mule deer habitat in this unit over the past year. Unit 051 has lost a significant amount of winter range over the last ten years. This is considered to be an important limiting factor for this herd. Above average amounts of precipitation received during the winter of 2004 and 2005 have produced slight improvements in range conditions which has helped to maintain population levels. Plenty of forage has been available during the last 2 years allowing deer to enter winter in excellent condition. Additional moisture is needed to sustain current population levels in the Santa Rosa Range.

Population Status and Trend

The population estimate for Unit 051 is showing a slight increase from the 2006 estimate. This population may be reaching carrying capacity. The primary limiting factor for this unit is the quality of available winter range. With the loss of native vegetation over the last 10 years due to wildfires carrying capacity has declined. Until habitat conversions take place and some of the lost areas are recovered, we probably won't see large increases in this population.

Units 061 - 062, 064, 066 – 068, Independence and Tuscarora Ranges: Elko County
Report by: Ken Gray

Harvest Results

Forty-four percent of all of the bucks harvested were 4-points or better. The past 5-year-average for 4-point or better bucks was 39%. The rifle hunt was split into 2 seasons for the second consecutive year. Ninety percent of the tags were offered in the first 16-day season while 10 percent were offered in the second 16-day season. The objective of the short early season, with the majority of tags, was to maintain the mature buck segment of the herd.

An emergency antlerless deer hunt was conducted in Area 6. The purpose of this hunt was to reduce the deer population in response to the catastrophic loss of crucial habitat destroyed by fires during the summer of 2006. A total of 1,116 tags was issued for this hunt. Hunters harvested 646 deer for a success rate of 58%.

Survey Data

A fall helicopter survey was conducted in December 2006. A total of 3,817 deer was classified with sex and age ratios of 32 bucks/100 does/64 fawns. The fawn ratio was 7 fawns/100 does lower that the 5-year average experienced from 1996-2000, the last comparable survey period. The buck ratio was the highest observed in the past 30 years. However, the antlerless hunt was responsible for the high buck ratio and in fact, after accounting for the extra antlerless harvest, the observed buck ratio was actually lower than expected.

A spring helicopter survey was conducted in March 2007. A total of 3,814 deer was classified with a young/adult ratio of 24fawns/100 adults. This ratio was 13 fawns/100 adults lower than the past 10-year-average and was the fourth-lowest spring fawn ratio ever recorded. The winter fawn loss was calculated at 50%, which was the third highest fawn loss recorded.

Habitat

Eleven fires burned a total of 662,730 acres within Area 6 during the summer of 2006. The most significant fires impacting important deer habitat included the Winters Fire (238,463 acres), the Sheep Fire (150,270 acres), the Amazon Fire (108,564 acres), the Suzie Fire (78,457 acres), and the Snow Canyon Fire (22,234 acres). If there is one fortunate aspect to these fires it is that most of them burned in higher elevations out of the cheatgrass infested areas. Because of this, these burns have a much better chance of recovering in 15 to 25 years. Since 1999, over 1,245,730 acres of rangeland have burned in Area 6, much of which was important deer habitat. The Department of Wildlife and the Elko BLM, with the help of several organizations including Nevada Bighorns Unlimited – Reno, the Mule Deer Foundation, and Barrick Goldstrike, spent considerable amounts of money and effort to seed some of the most important areas burned during the summer of 2006. The Department of Wildlife seeded close to 15,000 acres of crucial deer habitat while the Elko BLM seeded over 90,000 acres of deer habitat. Unfortunately, as of late March, precipitation levels have been well below average. Unless significant precipitation is received in the next 2 months, many of the seedings, especially those designed to restore the shrub component, may fail.

Population Status and Trend

The large fawn loss experienced in Area 6 during a relatively mild winter is a direct result of the extremely poor habitat conditions that exist throughout the management area. In many cases, deer had to move through 30 to 40 miles of burned habitat to reach winter ranges. Once there, deer were confronted with poor conditions as most of the winter ranges had burned in the past. In those that hadn't such as the Owyhee Desert, the sagebrush was in poor condition due the aroga moth infestation. In addition, very little green-up was available for deer during the fall and winter months. The poor habitat, combined with 2 weeks of sub-zero weather in mid January, most likely resulted in the high fawn mortality observed. Had the remainder of the winter not been mild with well below average snow depths, it is likely that the adult segment of the population also would have experienced high mortality rates.

The estimated population for the Area 6 Deer Herd decreased by 17 percent over last year's estimate. This decrease was due to poor recruitment and the deer harvested during the emergency deer hunt. This herd is capable of increasing rapidly due to the excellent summer habitat associated with this area. However, the poor winter range will dictate long-term population levels as it has done for 4 of the past 6 years. The carrying capacity of the winter range habitat is now estimated at between 6,000 and 7,000 deer. This is about 35 to 40% less than it was just 8 years ago and 75% less than it was 35 to 40 years ago. Continued aggressive restoration efforts are needed to increase the winter habitat carrying capacity for deer in this management area. However, if fire suppression priorities and techniques are not addressed, and fires continue to burn out of control in this area, this deer herd will continue to spiral downward to the point that there will be little hope of ever restoring it.

Unit 065, Sulphur Springs Range: Southwestern Elko County
Report by: Russell Woolstenhulme

Survey Data

No Surveys were conducted within this unit in 2006.

Habitat

Long-term habitat conditions for deer are poor in Unit 065 due to the tremendous amount of habitat that has been lost to fires since 1999.

Population Status and Trend

Poor habitat conditions have resulted in a deer population trend that is relatively stagnant with low deer numbers at the current time. The quota in this unit has been based on a similar number of tags to the previous year and past year's hunter success.

Units 071 – 079, 091, Northeastern Elko County
Report by: Kari Martin

Survey Data

Post-season flights were flown in December 2006. A total of 2,284 mule deer was classified during the survey with a resulting ratio of 29 bucks/100 does/57 fawns. The buck ratio was well above the previous 10-year average of 23 bucks/100 does. The fawn ratios are lower than the 10-year average of 68 fawns/100 does. Spring surveys were flown in early March. A total of 1,565 mule deer was classified during the survey and yielded a ratio of 35 fawns/100 adults or 45 fawns/100 does.

Habitat

The deer habitat in these unit groups has been reduced following the tremendous wildfires that have occurred in the area since 1999. Invasive weeds such as cheatgrass and mustard have invaded these areas and replaced much of the native vegetation that previously existed. However, even in areas where weed invasion has not occurred and perennial grasses and forbs are found, it will take years for the shrubs, mainly sagebrush and bitterbrush, to recover and expand back into these burned areas.

A good majority of the Area 7 deer herd winters south of Interstate 80 in the Pequop Mountains. Unfortunately as many of these deer attempt to make it to their winter range from Jarbidge and outlying areas, they are often struck by vehicles either on Highway 93 or Interstate 80. The Nevada Department of Wildlife and the Nevada Department of Transportation are working collaboratively on current and future projects to reduce the amount of vehicle mortality that is occurring.

Population Status and Trend

This year's recruitment rate is slightly below the previous 5-year average of 49 fawns/100 does, but should allow for limited population growth. The Unit Group 071-079,091 mule deer population has showed good recovery over the last 5 years since the severe winter of 2001-2002. This growth rate has leveled off for now and the herd estimate is shown to be stable relative to 2006 population level. Even if environmental conditions remain conducive to promote herd growth, the population will not be able to reach peak numbers that occurred in 1988 due to the significant loss of deer habitat from wildfires in much of Area 7. The Area 7 deer herd is not only recovering from impacts related to habitat loss, but 4 years of previous drought and the tough winter of 2001-02 as well.

Unit 081, Goose Creek Area: Northeastern Elko County

Report by: Kari Martin

Survey Data

Fall composition surveys were conducted in conjunction with elk composition flights in mid-December. A total of 113 deer was classified with a resulting ratio of 50 fawns/100 does.

Population Status and Trend

The fall fawn ratio is believed to be above average for this unit and deer herd numbers are expected to be improving. Overall this is a relatively small deer resource in terms of resident deer populations with some migration from both Idaho and Utah. The magnitude of this migration is dependent on weather conditions during the hunting season and timing of the hunt, with later seasons more likely to experience increased deer numbers from migration.

Units 101 - 108, Southern Elko and Northwestern White Pine Counties

Report by: Tony Wasley

Survey Data

A post-season helicopter survey was conducted in November 2006. A total of 3,396 deer was classified for ratios of 28 bucks/100 does/50 fawns. A spring helicopter survey was conducted in March 2007. During this survey 7,391 deer were classified. The young/adult ratio was 32 fawns/100 adults.

Weather and Habitat

Although above average moisture and snow pack occurred in 2005-06, Northeastern Nevada may be headed back into a drought based on the 2006-07 winter. Snow pack levels and moisture content is well below the long-term average for the Ruby Mountains and adjacent mountain ranges. Despite there being a strong possibility of drought-like conditions in Area 10 during the summer of 2007, the area was spared from the catastrophic fires that ravaged Area 6 in 2006.

Population Status and Trend

The Area 10 population is up slightly from last year. Area 10 has been relatively insulated from the severe drought conditions that adversely affected many of the State's deer herds. Population estimates in Area 10 have increased for 6 of the last 7 years. Good age class representation is observed throughout the buck segment of the population and hunters should continue to see many mature bucks. Though the fawn recruitment this year and last have only allowed for minor increases in the herd, barring extreme winter conditions, we should continue to be optimistic about future trends of the Area 10 deer herd.

Units 111 - 113, Eastern White Pine County
Report by: Curt Baughman

Survey Data

An aerial post-season composition survey was conducted in combination with the winter elk survey in late December 2006. This was the first post-season survey in this unit-group since 2000. A sample of 2,213 deer was classified in Units 111 and 113. Sex and age ratios of the sample were 28 bucks/100 does/54 fawns. The spring 2007 aerial survey was flown in March and was limited to Unit 111. The sample of 2,307 deer had an age ratio of 41 fawns/100 adults. When compared against the post-season ratio of 46 fawns/100 adults for Unit 111, the estimated winter fawn loss was minimal at 11%. The improved fawn recruitment rates observed in 2006 and 2007 are 7 and 5 fawns/100 adults, respectively, above the previous 10-year average (1996-2005) recruitment of 36 fawns/100 adults.

Habitat

Habitat conditions improved between 2004 and 2006 due to improved precipitation. Moisture received during the winter of 2004-05 was the highest since the winter of 1968-69. The 2005 water year in the Ely area was 136% of normal. This brought substantial improvements in water distribution as well as to forage quantity and quality. These improvements were maintained and enhanced in 2006 by precipitation levels that remained above average through July. These conditions are reflected in a second consecutive year with fawn recruitment near 50 fawns/100 does. Since July, drier conditions have returned with precipitation totals of 70% over that period. The past winter brought a period of intense cold, however it was not prolonged enough to pose significant problems. Snow cover was persistent, but snow depths were manageable for mule deer. As of 1 April 2007, the precipitation total for the current 2006-07 water-year stands at 85%. Habitat conditions may stabilize or decline somewhat in 2007, however overall conditions should remain average or above unless summer drought conditions are experienced.

During the summer 2006, a wildfire burned a key portion of the remaining crucial winter and spring range on the east Schell bench in Unit 111. This area had escaped the wildfires that burned much of these crucial deer ranges in the 1980s. In spite of the burn, deer were found concentrated in the usual areas during the recent spring survey. The loss of the shrub component has diminished the value of the area as winter range. If cheat-grass and other annuals establish on this site as successfully as they did on the burns of the 1980s, spring range values could also be drastically compromised.

Although the short-term picture has improved, long-term habitat potential for mule deer is slowly declining due to the encroachment of pinyon and juniper trees upward into mountain brush zones and downward onto bench areas. In some areas, degradation from severe drought (2001-2003) has resulted in loss of native vegetation and expansion of cheatgrass and noxious weeds. Large-scale projects designed to control the encroachment of trees without imposing long-term impacts to shrub communities will be needed to reverse this trend.

Population Status and Trend

Decreasing recruitment levels from 1999 through 2004 resulted in a corresponding population trend. The habitat improvement described above has resulted in an increasing population trend as indicated by 2 consecutive years of strong fawn recruitment. Reproductive potential should remain above average in 2007 with possibilities for further population expansion unless environmental conditions decline.

Units 114 – 115, Snake Range: Southeastern White Pine County
Report by: Curt Baughman

Survey Data

An aerial post-season composition survey was conducted in combination with the winter elk survey in early January 2007. This was the first post-season survey in this unit-group since 2000. A sample of 518 deer was classified in Units 114 and 115. Sex and age ratios of the sample were 41 bucks/100 does/63 fawns.

The spring 2007 aerial survey was flown in March and was limited to Unit 115. The sample of 309 deer had an age ratio of 40 fawns/100 adults. When compared against the postseason ratio of 52 fawns/100 adults for Unit 115, winter fawn loss was measured at 23%. The spring 2006 survey showed a similar fawn recruitment level to 2007. The improved fawn recruitment rates observed in 2006 and 2007 are well above the previous 10-year average (1996-2005) recruitment of 29 fawns/100 adults.

Habitat

The drought years of the early 2000s were generally more severe in southern White Pine County. Habitat conditions improved between 2004 and 2006 due to improved precipitation. Moisture received during the winter of 2004-05 was the highest since the winter of 1968-69. The final precipitation total for 2005 in the Ely area was 136% of average. This resulted in favorable improvements in water distribution as well as to forage quantity and quality. These improvements were maintained and enhanced in 2006 by precipitation levels that remained above-average through July. The result was high fawn production in 2006 and a second consecutive year in which fawn recruitment was measured above 55 fawns/100 does. Although habitat conditions were better to the south of Ely in 2006 than to the north, southern areas have experienced drier conditions since then and could see declining habitat conditions with the dry spring that has been experienced to date.

Although short-term habitat improvements have occurred, long-term habitat potential for mule deer is slowly declining due to the encroachment of pinyon and juniper trees upward into mountain brush zones and downward onto bench areas. In some areas the severe drought experienced during 2001-2003 has resulted in loss of native vegetation and expansion of cheatgrass and noxious weeds. Large-scale projects designed to control the encroachment of trees without imposing long-term impacts to shrub communities will be needed to reverse this trend.

Population Status and Trend

Four of the last 6 years witnessed below-average fawn recruitment including 2 of the lowest on record. The result was a slow downward population trend from 2001 to 2005. The strong recruitment observed in 2006 and again in 2007 indicates a reversal of this trend. Population modeling using this strong recruitment generates a substantial population increase. In addition, the observation of 41 bucks/100 does in the 2006 post-season sample was above the 35 bucks/100 does predicted by last year's population model when the reported 2006 harvest is taken into account. This indicates that last year's population was conservative. The health and productivity of this mule deer herd should be at least average in 2006. There is potential for further population expansion if summer and winter moisture patterns are near normal levels.

Unit 121, North Egan, Cherry Creek Ranges: White Pine and Elko Counties

Report by: Russell Woolstenhulme

Survey Data

Spring mule deer composition surveys were performed from the helicopter during March 2007. The Cherry Creek Range and North Egan Range were surveyed along the East Benches as well as Gleason Basin and other common spring use areas. A total of 592 deer was classified with an observed age ratio of 48 fawns/100 adults, indicating good recruitment occurred this spring.

Habitat

Adequate precipitation during the winter of 2005-2006 in conjunction with light snow conditions resulted in good fawn production and recruitment into the population. Horse round-ups were conducted in the Cherry Creek Range and Butte Valley during the summer of 2006 which undoubtedly helped habitat conditions for deer as well. Precipitation for Unit 121 has been below normal for the winter and spring of 2006-2007. If this pattern persists throughout the summer months, it could result in declining habitat conditions for the 2007 herd year.

Population Status and Trend

The 2007 spring fawn ratio of 48 fawns/100 adults will allow the herd to continue its stable to increasing population trend. Further indications of herd stability and growth can seen from hunter success rates. The 2006 hunter success rates for resident any legal weapon hunt 1331 were 68%, which is above the 10-year average of 42% and is a considerable increase over the 2005 success rate of 44%.

Units 131 - 134, Southern White Pine, Eastern Nye and Western Lincoln Counties

Report by: Mike Podborny

Survey Data

A post-season herd composition survey was conducted by helicopter in early January 2007 in conjunction with the elk survey. The survey area included the central and eastern portion of the White Pine Range, the east side of the Horse Range, Grant Range and the Golden Gate Range. There were 460 deer classified during the survey. The age and sex ratio of the survey was 31 bucks/100 does/60 fawns. The previous post-season survey was conducted in December 2004 with 469 deer classified with age and sex ratios of 48 bucks/100 does/51 fawns. The spring survey was conducted from the ground in March 2007 in the White Pine Range and Horse Range. There were 92 deer classified and the ratio was 39 fawns/100 adults similar to the spring 2006 ratio of 38 fawns/100 adults.

Habitat

Habitat conditions have improved in the short term from several years of above average precipitation. The long term quality and quantity of summer ranges are slowly being reduced by pinion/juniper forests taking over mountain brush zones lowering the carrying capacity for mule deer. Although this deteriorating condition also affects winter range, it is believed the effect on summer range has a greater impact to the deer herd. No major fires have occurred since 1999 but smaller fires in upper elevations in the last few years may benefit deer habitat in the long term.

In December 2006, 4 new wilderness areas were designated in Unit 131 as Bald Mountain, Red Mountain, Shellback and White Pine Range totaling 119,000 acres. The existing Currant Mountain wilderness was also expanded by 10,700 acres. The wilderness designation will restrict off road travel, wind energy development, mining and oil and gas exploration. Habitat projects such as water developments and vegetation manipulation will be limited in wilderness areas.

Population Status and Trend

The spring recruitment in 2007 was similar to 2006 and resulted in an upward trend in the population. The quantity and quality of forage has increased along with the amount of water available to all wildlife with several years of above average moisture. These conditions are responsible for the short-term increasing trend in the deer herd.

Units 141 - 145, Eureka and Eastern White Pine Counties

Report by: Mike Podborny

Survey Data

There was no post-season herd composition survey conducted. The most recent fall survey was conducted in 2003 and resulted in a ratio of 24 bucks/100 does/51 fawns from a sample of 1,540 deer. Spring surveys were conducted in March 2007 from the ground with 434 deer classified in the Diamond Mountains. In 2006 the spring ground survey resulted in 560 deer classified. The 2007 spring recruitment rate was 36 fawns/100 adults; slightly lower than the 40 fawns/100 adults in 2006.

Habitat

Habitat conditions have improved in the short term from several years of above average precipitation. In the long term deer habitat is being reduced by pinion/juniper forests crowding out the highly productive mountain brush zones in some areas with the entire browse community maturing and becoming less productive as it matures. Exploration for gold and oil has increased throughout the entire area and a large molybdenum mine is being proposed in Unit 143. These projects may impact deer habitat in the future. The last major wildfires were in 1999 and 2001 in Units 141 and 142. These fires burned and converted extensive mountain brush zones into monocultures of cheatgrass and other annual weeds reducing the value of these areas for deer and other wildlife. The cumulative effect of these fires has been the reduced capacity of the range to support deer. The post-fire seeding effort to restore the most critical portions of these fires has resulted in partial success.

Population Status and Trend

The 2007 spring recruitment was slightly below the above average recruitment in 2006 but still resulted in an upward trend in the population. The population had declined for 5 consecutive years prior to 2006.

Units 151, 152, 154, 155, Lander and Western Eureka Counties

Reported by: Larry Teske

Survey Data

Fall deer surveys were performed from the ground during the month of December. Although all of the units were surveyed, deer were only located in Units 151 and 152 due to access problems. A total of 135 deer was classified. The resulting ratios were 17 bucks/100 does/63 fawns.

Spring surveys were performed from the ground during the period March 5 - 23 as time and weather permitted usually following sage grouse lek surveys conducted at daybreak. Survey conditions were difficult due to very little snow on north slopes and south slopes bare up to 7,000 feet. The green-up was extensive. Many deer were found at higher elevations. A sample of 185 deer was obtained. The resulting ratio computed to 34 fawns/100 adults.

Habitat

Good habitat conditions existed at the beginning of the winter 2006-2007 from adequate moisture the previous year. Currently, it appears that another drought is starting. Several streams that are usually flowing in the spring remained dry this year. Very little snow remains in the high country.

The Battle Mountain District of the BLM is making progress on allotment management grazing plans. Plans that remain to be completed include the Argenta, which is in the heart of deer habitat in Unit 152. This area suffered greatly during the last drought from competition with livestock. Progress is also being made in Unit 151 where several allotment management plans need to be completed for the Battle Mountains and Fish Creek Mountains. The Carico allotment was completed and implemented two years ago and has shown tremendous improvements. Unfortunately, this area is now being considered for an OHV trail which will no doubt have some negative impacts on the deer herd and other wildlife despite our best efforts to minimize disturbance.

Population Status and Trend

The Area 15 adult deer population survived the winter in good condition. The observed 34 fawns/100 adult ratio was lower than last year and only a slight improvement from the previous 4 spring surveys where the observed fawn/adult ratios averaged 31. This may have been a result of the poorer condition of the animals following the winter of 2005-2006. The population remains in stable condition.

Units 161 - 164: North-Central Nye and Southern Lander and Eureka Counties
Report by: Tom Donham

Survey Data

A post-season aerial composition flight was conducted in December 2006, and included Units 161, 162, and 163. A total sample of 587 deer was classified resulting in the ratios of 32 bucks/100 does/51 fawns. The observed fawn ratio indicates that the Area 16 deer herd experienced average production in 2006. During April 2007, a spring composition flight was conducted. Due to very dry, warm conditions, and a lack of significant snow accumulations, deer were found to be widely scattered from the bottom to the top (9,000 ft.) of mountains and in small groups. A total of 342 mule deer was classified as 251 adults and 91 fawns. The 36 fawns/100 adult ratio indicates that over winter fawn survival was fair.

The previous post-season survey in December 2004 had ratios of 32 bucks/100 does/69 fawns. The previous spring composition survey in March 2005 classified a total of 1,420 deer with a ratio of 26 fawns/100 adults.

Population Status and Trend

The Area 16 deer herd has remained relatively static due to lowered recruitment rates experienced most years since the mid to late 1990's. Fortunately, production has at least remained at maintenance levels during that period. Survey data gathered in late 2006, and early 2007 indicate that the Management Area 16 mule deer population experienced the best fawn recruitment seen since 1999. Due to increased recruitment, the Area 16 mule deer population is experiencing some growth for 2007. Unfortunately, the conditions that allowed very good over winter survival will likely negatively impact the population due to a lack of spring green up and poorer quality forage going into the fawning period. Unless climatic conditions improve very soon, the population will struggle to remain at current levels for any length of time. The Area 16 pre-hunt population estimate is approximately 3,800 animals.

Units 171 - 173: Northwestern Nye and Southern Lander Counties
Report by: Tom Donham

Survey Data

Post-season composition surveys were not conducted during 2006. During spring aerial composition surveys conducted in April 2007, a very modest sample of 791 animals was classified as 593 adults and 198 fawns or 33 fawns/100 adults. The observed fawn/adult ratio indicates that the Management Area 17 deer population experienced fair recruitment in 2007 due to higher than normal over winter survival of fawns. Due to lack of significant snow accumulations, deer were widely scattered, in small groups and observed from the lower benches to over 9,000 feet.

The last post-season survey was conducted in early December 2005 resulting in a ratio of 37 bucks/100 does/52 fawns. The previous spring composition survey was conducted in 2006 from the ground by three NDOW biologists over the course of 3 days. A total of 838 deer was classified during the effort resulting in an observed ratio of 30 fawns/100 adults.

Population Status and Trend

Recruitment levels have remained below average throughout central Nevada for the past 5 years. This reduction in recruitment has resulted in a static trend for most mule deer populations in northern Nye County. The trend is most likely due to drought conditions and resultant impacts not only to animal body condition, but also to wildlife habitat as a whole. The increased recruitment observed in 2007 has provided for some growth of the Area 17 herd in the short-term. Unfortunately, like in Area 16, the same conditions that allowed increased over winter survival of fawns this past winter will likely negatively impact body condition of deer going into the fawning period as well as impacting their habitats. Unless conditions improve soon, the boost in the Area 17 herd will likely be short-lived. The Unit Group 171-173 pre-hunt adult deer population estimate is approximately 5,000 animals.

Units 181 - 184, Churchill, Southern Pershing and Western Lander Counties
Report by: Jason Salisbury

Survey Data

Post-season surveys were conducted on 20 January 2007 and resulted in the classification of 91 deer. The resulting sex and age ratios were 97 bucks/100does/63 fawns. Mule deer were observed from 6,500 to 8,500 feet in elevation due to the mild winter that was experienced.

Spring mule deer ground surveys were conducted in Management Area 18 in late February and resulted in the classification of 82 deer (24 fawns and 58 adults), yielding a composition ratio of 41 fawns/100 adults. Spring green-up was non-existent due to the lack of moisture received from the fall of 2006 into the early spring of 2007.

Habitat

The Area 18 mule deer herd has had to cope with extensive pinion/juniper encroachment into browse areas that support mule deer. Projects are currently being developed that will address opening up the closed pinion canopy habitat type to benefit mountain brush species. These projects will benefit mule deer in the Desatoya Mountains within Unit 184.

In 2005, a project in the Edwards Creek area of Unit 184 removed pinion pine using a tree mulcher that opened up a closed canopy habitat type. This project is expected to benefit browse species in the near future. Similar projects were conducted in the Pine Nut Mountains where sagebrush and bitterbrush were pruned down to a 4- to 6-inch level to promote new and more palatable growth. Evaluations will be made to determine if browse species positively respond to these treatments with livestock present.

Seeding efforts on past burns are beginning to recover and mule deer have keyed in on the early successional stages of browse species located on north facing slopes and creek and drainage bottoms.

Population Status and Trend

Based on limited sample sizes, recruitment levels have increased over the last 2 years. This is most likely due to the above average precipitation received during 2004 to 2005. This increased precipitation should have resulted in better forage availability coupled with a mild winter to allow for increased fawn survival. The fawn ratio observed in 2007 of 41 fawns/100 adults indicates that mule deer fared well through the winter of 2006-2007. Field observations have noted that green-up of grasses and browse species did not occur until March 2007. Habitat conditions for mule deer this spring and summer may not provide mule deer with quality forage needed to promote good body condition before entering into the fall. The only exception is the Lahontan Valley where irrigated fields provide consistent forage needed for survival. However, the added risk associated with valley deer is the conversion of fields to subdivisions and increased mortality rates from vehicle collisions. Over the last 10 years, the average hunter success for the resident 1331 any legal weapon hunt has been 31%. Last year's hunter success rate of 33% is similar to the past 10-year average. The 2006 hunter success rate is an indication that the mule deer population in Management Area 18 is stable with a slight increasing trend.

Unit 192, Carson River Interstate Mule Deer Herd: Douglas County
Report by: Carl Lackey

Survey Data

Fall surveys in the Carson River herd were conducted with the corresponding California biologist and occurred in early January of 2007. The survey resulted in the classification of 272 animals with a ratio of 23 bucks/48 fawns/100 does. A similar post-season flight last year occurred approximately one week earlier in 2005 with a much lower sample size confirming that the migratory portion of this herd is not moving into Nevada until late December. Conditions were very good for the flight with clear skies, cool temperatures and

light winds. During the spring survey flight, which occurred on March 19th under similar climatic conditions with the California flight crew, 228 deer were classified with a ratio of 28 fawns/100 adults indicating an overall winter fawn loss of about 30%.

Habitat

Urbanization along the Carson Front continues to encroach upon winter range traditionally used by the Carson River deer herd. This is clearly illustrated each year during the spring survey flights which take place with the California flight crew under their *line-transect* survey methodology. Since this technique uses GPS data to fly the exact same transects every year, and because these transects are shortened every year due to housing it is very easy to observe the loss of habitat due to development. This is the most important issue facing deer herds in the Carson Range.

Population Status and Trend

The 2007 pre-hunt adult estimate for Nevada's portion of the Carson River deer herd is approximately 500 animals. As with the Loyalton-Truckee/Peavine herd (Units 194-196) this number includes Nevada's resident deer within the herd. Without intensive monitoring and research, we can only estimate that the resident portion of this population is near 20%. Under current habitat regimes this herd is probably at carrying capacity, a number which declines every year in correlation to increased urbanization. This trend of declining numbers will continue given the loss of habitat this herd has experienced on both sides of the state line. Regardless, fawn production and recruitment rates are at maintenance levels for the carrying capacity and overall the herd appears healthy at low levels compared to historic numbers.

Unit 194, 196, Carson Range and Peavine Mountain Interstate Herd: Washoe and Carson City Counties

Report by: Carl Lackey

Survey Data

Biologists completed a fall composition survey flight in early January of 2007 and classified 250 deer with a resulting composition ratio of 22 bucks/52 fawns/100 does (buck ratio is known to be biased low due to limited buck observability at this time). California biologists accomplished the spring survey flight in March 2007 which classified 515 deer at 30 fawns/100 adults. The associated over-winter fawn loss is estimated at less than 30%. The fawns observed appeared healthy and in good condition. As in past surveys the majority of deer in Unit 194 are found at tree-line and from Highway 431 north to Verdi. The deer in Unit 196 usually concentrate on the south facing slopes of Peavine Mountain, however, this year they were found mostly in the easterly running drainages off the peak due to wildfire habitat losses on the southern slopes.

Habitat

A significant portion, roughly 6,700 acres of Unit 196's winter range was burned in 2006 during a fire on Peavine Mountain. Adding to this loss is the ever increasing urban development on both Peavine and along the foothills extending from Verdi south to Mount Rose. The Peavine fire area was seeded in March 2007 in an attempt to accelerate the recovery of grass and shrub species lost in the fire. Previous fire rehabilitation efforts accomplished in the southern portion of Unit 194 on the Waterfall Fire have seen some successes in the second year post-fire as evidenced by seedling establishment and deer use in select sites.

Population Estimates and Trend

This deer herd, known as the Loyalton-Truckee Interstate herd, is probably operating near the lowered carry capacity for the past two decades compared the 4 to 5 times greater carrying capacity historically. The population limit placed on this deer herd by human encroachment/development is reduced every year because of the decline in available winter range and loss of productive mountain brush summer ranges.

The 2007 pre-hunt adult estimate for Nevada's portion of the Loyalton-Truckee Interstate herd is approximately 700 animals. This number includes Nevada's resident deer, a proportion of this total

considered to be less than 40%. Overall this deer herd appears healthy with adequate fawn recruitment rates and generally good age cohort distribution. The long-term trend in total population numbers continues downward, mostly due to habitat loss and fragmentation. This unit remains a much desired area to hunt deer for locals and non-residents, with high success rates and strong antler point-class composition.

Unit 195, Virginia Range Herd: Storey, Washoe and Lyon Counties
Report by: Carl Lackey

Survey Data

Formal post-season and spring surveys have not been completed for Unit 195 since 2002 due to the inability to classify an adequate sample size that provides accurate inferences to the sex and age ratios.

Habitat

The majority of land in this unit is privately owned and therefore difficult to manage for wildlife. Additionally, a significant portion is being developed, commercially and residentially. Furthermore, the unit will soon be separated north to south upon completion of a planned highway extending from Interstate 80 to Highway 50. The resulting fragmentation and loss of habitat has decreased this once migratory herd to a small, mostly resident herd.

Population Status and Trend

The population trend for this deer herd is derived primarily from harvest statistics. Deer are fairly common along the Truckee River corridor on mostly private lands. Interest in Unit 195 appears to be fairly high with 236 first-choice applications for 24 tags. Most of this can be attributed to applicants wishing to hunt locally. Hunter success indicates an adequate number of deer for the tags sold. The population is thought to be stable to declining at this time.

Units 201, 202, 204 – 206, Walker/Mono Interstate Deer Herd: Douglas, Lyon and Mineral Counties
Report by: Jason Salisbury

Survey Data

NDOW conducted fall survey flights in January 2007, which resulted in the classification of 990 deer. The sample consisted of 167 bucks, 533 does, and 290 fawns for a ratio of 31 bucks/100 does/54 fawns. NDOW used directed search patterns to locate groups of deer. Mule deer were found at elevations ranging from 6,500 to 8,500 feet in elevation. Moisture received from the 2006- 2007 winter was below average resulting in the observation of large groups of deer still utilizing the upper elevation basins where browse species remained in better condition.

Spring survey flights were conducted in March 2007 by California Fish and Game and produced a sample of 762 deer. These 762 animals were classified as 540 adults and 222 fawns for a computed fawn ratio of 41 fawns/100 adults. The small survey sample observed during the spring survey was the result of animals being spread out over a large geographic area and elevation. Animals were difficult to locate because they were not utilizing traditional spring habitat. Some green-up existed in the lower elevations but generally these animals still occupied the upper elevation areas that had received increased precipitation, which resulted in earlier green-up.

Habitat

The Jackass Flat Fire started by lightning in July 2006. The area that burned was located on the northern end of the Sweetwater Mountains on the California-Nevada state line, which is within the Bridgeport Ranger District. Over three quarters of the fire occurred in Nevada, which accounted for 5,394 acres. The burned area consumed rangeland in the Risue Canyon vicinity, north of Taylor Valley and in the Wellington Hills.

The area that burned is considered critical mule deer winter range. Approximately 2,000 mule deer utilize this resource area during the winter months. The largest portion of habitat that burned consisted of a monoculture type single leaf pinion environment. There was no under story present in these areas. Considerable amounts of cheatgrass are present in the immediate area that did not burn. There were concerns that without adequate seed aerially applied, the area might revert to a cheatgrass monoculture plant community that will negatively impact wintering mule deer, sage grouse, mountain quail and other species. In March, NDOW aerially seeded 2,000 acres. The seed mixture consisted of Great Basin Wild Rye, Mountain Big Sagebrush, Blue bunch Wheat grass and Indian rice grass. Future evaluations of the seeded area will examine the success of the seeding effort.

Presently, migration corridors exist in the Wellington Hills area, Unit 201, to allow mule deer to migrate through to the winter range. However, migration corridors are starting to become negatively impacted by increased urbanization. Additionally, range improvements are needed in the Wellington Hills and Excelsior Mountains, Unit 206 to address problems associated with mule deer winter range.

Population Status and Trend

This year's fawn recruitment rate of 41 fawns/100 adults should maintain herd stability if not allow for limited growth. The Area 20 herd appeared to survive the past winter fairly well. Above average precipitation in the winter months of 2005 and 2006 allowed browse species to positively respond and provided more forage availability. Adequate forage quality coupled with a mild winter allowed the population to have minimal loss of fawns. The pre-hunt adult deer population estimate for the Walker River interstate herd is approximately 5,200 animals. Nevada's portion of this herd is approximately 1,600 deer (including a limited number of resident deer) which is a 30% apportionment based upon the percentage of the herd that occupies winter range in Nevada and the amount of time the animals remain in the state. Harvest objectives are then distributed between Unit groups 201 & 204 and Unit groups 202, 205 and 206. This is a 40% and 60% split, respectively. Deer in Unit 205 are actually yearlong residents but harvest levels are not significant enough to warrant a separate management approach.

Unit 203, Mason and Smith Valley Resident Herds: Lyon County

Report by: Jason Salisbury

Survey

Winter mule deer composition surveys were conducted in February 2007. This survey resulted in a total of 64 mule deer being classified with sex and age ratios of 39 bucks/100 does/54 fawns. Areas surveyed included the Mason Valley Wildlife Management Area (MVWMA) and the surrounding private agricultural fields.

Habitat

Habitat improvement on MVWMA may include the removal of decadent buffalo berry stands to allow new growth, which is more palatable to mule deer. The use of fire has shown to be beneficial in restoring the viability of buffalo berry stands. The only drawback to this management technique is the occurrence of livestock grazing on MVWMA. In the future, stands of buffalo berry need to be monitored to ensure that impacts from livestock are minor.

Population Status and Trend

The mule deer population in Mason Valley and Smith Valley is stable at this time. The mule deer that occupy MVWMA are showing a stable population trend; unlike other areas of Mason Valley and Smith Valley the management area has the ability to manipulate habitat for the benefit of wildlife species.

The largest threat to mule deer populations in these valleys is the conversion of brush land to monoculture onion and garlic production. With the reduction of brush species, mule deer do not have adequate cover or corridors to move through to agricultural fields or brush zones. In the future, this type of manipulation to habitat will have negative effects to the long-term health of this herd.

Units 211, 212: Esmeralda County
Report by: Tom Donham

Survey Data

Presently, no surveys are conducted in Area 21. Past survey efforts have not resulted in sufficient sample sizes for use in monitoring population dynamics.

Population Status and Trend

Due to recent climatic conditions, the over winter survival of fawns has been good throughout nearby central Nevada in 2006/2007. The Area 21 deer herd should have experienced the same increased recruitment. Despite this improvement in recruitment, very dry, warm conditions through much of the winter and into spring are expected to negatively impact production in 2007, and the overall condition of adult animals entering the early summer period. If conditions do not improve, Area 21 deer herds will struggle to remain at current levels for any length of time. It is doubtful that NDOW will ever have adequate biological data with which to accurately assess population status and trend in Area 21. Presently, the population estimate for Units 211 and 212 is approximately 350 deer.

Units 221 - 223, Northern Lincoln and Southern White Pine Counties
Report by: Mike Scott

Survey Data

Post-season aerial surveys were conducted during December 2006, and resulted in the classification of 1,898 deer. The sample consisted of 363 bucks, 952 does, and 583 fawns with a ratio of 38 bucks/100 does/61 fawns. The sample obtained the previous year consisted of only 144 deer, consisting of 29 bucks, 72 does and 43 fawns for a ratio of 40 bucks/100 does/60 fawns.

Spring surveys were conducted in March 2007, and resulted in the classification of 798 deer consisting of 469 adults and 329 fawns. The sample resulted in an unrealistically high fawn ratio that was not comparable relative to the fall fawn production value. Surveys were completed late enough in the spring that the majority of does were likely in transition to fawning ranges while does with fawns remained on winter ranges.

Habitat and Population Status and Trend

Degraded habitat conditions due to pinyon and juniper invasion and decadent or senescent mountain brush communities across broad areas in this portion of Lincoln County are likely reducing the herd's full potential. New influences resulting from installation of power lines, piping of water to the south, increased OHV traffic resulting from new trail systems, among other influences may result in future challenges for this deer herd. Several years of moderate precipitation combined with a continuing predator removal project are the likely reasons for the increasing trend of this population over the last few years. The prehunt population estimate for Area 22 is 4,900 compared to 4,600 in 2006.

Unit 231, Wilson Creek Range: Northeastern Lincoln County
Report by: Mike Scott

Survey Data

Post-season aerial surveys were conducted in December 2006. A total of 1,062 deer was classified with a ratio of 39 bucks/100 does/61 fawns. Yearling bucks comprised 50% of the bucks classified.

Spring aerial surveys were conducted during March 2006. They resulted in the classification of 811 deer consisting of 574 adults and 237 fawns which results in a ratio of 41 fawns/100 adults.

Habitat and Population Status and Trend

Continued expansion of pinyon and juniper is having a negative effect on this deer herd. Although mule deer habitat in Area 23 has benefited from numerous burns over the past decade, high numbers of wild horses continue to degrade habitat for mule deer despite recent gathers by BLM. In February 2007, BLM gathered approximately 750 wild horses in Area 23. Although this effort will help reduce the negative effects on habitat due to wild horses, the area is still over the appropriate management level set by the BLM. A proposal to install wind powered generators on Table Mountain and Mount Wilson has the potential to negatively impact the majority of high elevation summer range for mule deer in Area 23. The project proposes to install some 80 wind powered generators on Mount Wilson and 120 on Table Mountain. These generators are nearly 400' tall and the habitat destruction that would result would likely have extreme negative effects on the population. NDOW supports the concept of renewable energy; however, biomass energy would be the proper form of energy to harness from this area and would be beneficial to mule deer and other wildlife. Area 23 is a popular destination for nonresident antler hunters. These people tend to care little about the health of the deer herd or their habitat. Some of these people use powered parachutes or ATV's to locate or collect shed antlers from deer or elk. Their efforts may be placing added stress on wildlife and wildlife habitat. Wilderness, transfer of water, public and private land sales, and increasing use of OHV's all are collectively and cumulatively impacting this herd. Several years of decent precipitation combined with a continuing predator removal project are the likely reasons for the short-term increasing trend of this population over the last few years. The prehunt population estimate for Unit 231 is 2,800 animals, compared to 2,600 in 2006.

Units 241 – 245, Clover, Delamar, and Meadow Valley Mountain Ranges: Lincoln County

Report by: Mike Scott

Survey Data

Post-season aerial surveys were done in conjunction with winter elk surveys. A total of 286 deer were classified as 60 bucks, 126 does, and 100 fawns for a ratio of 48 bucks/100 does/79 fawns. This was the first post season sample obtained since 2000. Yearling bucks comprised 50% of the bucks classified.

Late spring aerial surveys produced a very small sample as deer had migrated off the winter ranges by the time a survey could be completed. The survey resulted in the classification of only 99 deer including 64 adults and 35 fawns, which results in a ratio of 55 fawns/100 adults.

Habitat and Population Status and Trend

The wildfires that burned significant areas of mule deer winter range on the south face of the Clover Mountains during the summer 2005 are showing good habitat recovery. Although cheatgrass and red brome have reinvaded these areas, many shrubs mule deer depend on are resprouting. Similar observations were made in the Delamar Mountains. The prehunt population estimate for Area 24 is 700 animals.

Units 251 - 253: South Central Nye County

Report by: Tom Donham

Survey Data

Presently, neither post-season nor spring surveys are conducted in these units. The last surveys conducted in the area occurred in 1998 and failed to yield a sufficient sample for analysis.

Population Status and Trend

As with most central Nevada mule deer populations, drought conditions have impacted recruitment rates in Area 25 for some time. Due to recent climatic conditions, the over winter survival of fawns has been good throughout central Nevada in 2006/2007. Fair production experienced during 2006 combined with good over winter survival should result in some growth in the Area 25 deer herd. Unfortunately, the conditions which provided for good over winter survival will negatively impact range conditions into early summer at the very

least. Due to a very warm and dry winter and spring deer will be entering the fawning period in less than optimum body condition because of the lack of a significant spring green up, and poorer quality forage overall. If conditions do not improve, most deer herds in central Nevada will struggle to remain at current levels for any length of time. The population estimate for this unit group, based on professional judgment and harvest data, is approximately 350 animals.

Units 261 - 268, Clark and Southern Nye Counties

Report by: Patrick Cummings

Survey Data

Mule deer habitat in Area 26 is marginal; consequently densities are below levels that warrant annual aerial surveys. Past survey efforts have not resulted in sufficient sample sizes for use in monitoring population dynamics.

Habitat

In 2006, wildland fires consumed nearly 3,000 acres in the Spring Mountains (southeast portion of Lovell Canyon, south side of Trout Canyon, Red Rock Scenic Loop, and west side of Potosi Mountain.

On June 22, 2005, lightning strikes ignited the Goodsprings Fire which ultimately consumed 33,484 acres including several small pockets of mule deer habitat.

Due in part to proximity to Las Vegas, recreational pursuits that include OHV and mountain bike use and resultant proliferation of roads and trails, feral horses and burros, and suburban sprawl serve to degrade mule deer habitat. In December 2005, the Las Vegas District, Bureau of Land Management (BLM) issued a Decision Record and Finding of No Significant Impact for establishment of Appropriate Management Levels (AML) in the Johnnie, Muddy Mountains and Wheeler Pass Herd Management Areas (HMA). The established AMLs for horses in the Johnnie HMA and Wheeler Pass HMA are 0 and 47-66, respectively. The established AMLs for burros in the Johnnie HMA and Wheeler Pass HMA are 54-108 and 20-35, respectively.

In January 2007, BLM and USFS conducted gathers of feral horses and burros in the Johnnie HMA, Wheeler Pass HMA and Red Rock HMA. Through theses efforts, 368 horses and 575 burros were captured. In the Wheeler Pass HMA, of the 289 horses gathered 240 were removed and 45 were released back into the Spring Mountains. BLM has indicated 61 horses were left in the Wheeler Pass HMA. Thirty-seven burros captured in the Wheeler Pass HMA were removed, resulting in an estimated 30-45 burros remaining in the HMA. In the Johnnie HMA, of the 79 horses captured 49 were removed and 30 were released back into the Spring Mountains. BLM has indicated 41 horses were left in the Johnnie HMA. All of the 363 burros gathered in the Johnnie HMA were removed, resulting in an estimated 75-110 burros remaining in the HMA. In the Red Rock HMA, no horses were captured. BLM has indicated 41 horses remain in the Red Rock HMA. All of the 175 burros captured in the Red Rock HMA were removed. BLM has indicated 29-43 burros were left in the Red Rock HMA.

In June 2004, the Humbolt-Toiyabe National Forest issued a Decision Notice and Finding of No Significant Impact for Spring Mountains National Recreation Area Motorized Trails Designation Project. The decision to implement alternative five (with modifications) as summarized in the respective Environmental Assessment involves minimal closure of newly established roads. Thus, the recently authorized management prescription for motorized trails ensures the status quo for the foreseeable future.

Population Status and Trend

The mule deer population in Area 26 likely experienced a decline as result of severe drought conditions in three successive years (2000-2002). During this period, mule deer coped with reduced availability of quality forage, and subsisted largely on cured and woody vegetation low in digestibility and nutritive value. Thus, the consequences of mule deer in Area 26 surviving on a lower nutritional plane were reduced reproduction and recruitment.

As of this writing in March 2007, environmental conditions range from poor to fair due to low precipitation receipts in 2006 through early 2007. Based on overall unfavorable environmental conditions, mule deer production and recruitment in 2007 is expected to be lower than in recent years (2003 - 2005).

Units 271, 272, Southern Lincoln and Northeastern Clark Counties
Report by: Mike Scott

Survey Data

No surveys were conducted in Units 271 or 272 during the reporting period. Mule deer densities are low enough that standard surveys do not result in enough data for analysis. The harvest strategy is based on past hunter demand and success.

Habitat

Water developments installed with the assistance of sportsmen's' groups, coupled with a few natural springs, provide limited suitable habitat for mule deer. Large-scale wildfires burned in both the Mormon and Virgin Mountains during the summer of 2005, which will have both short- and long-term detrimental effects on the mule deer population in these areas. Areas of suitable habitat hold limited populations of mule deer mainly in the Virgin Mountains, although deer are also observed in the Mormons Mountains on occasion as well.

Unit 291, Pinenut Mountains: Douglas County
Report by: Carl Lackey

Survey Data

No formal surveys were conducted in this unit during the fall of 2005 or the spring of 2006. General observations and anecdotal reports indicate that this herd is stable over the short-term but has declined significantly over the long-term.

Habitat

Expansion of the pinion forest over the past few decades, livestock grazing practices, increased human recreational activity and increased urbanization on the perimeter with corresponding traffic have all contributed to loss of habitat and the decline of mule deer in Unit 291. Significant portions of the unit contain monocultures of pinyon-juniper, much of which is dead. Habitat enhancements in the form of chaining, mowing or prescribed burns are recommended to reduce the pinyon-juniper coverage, however this type of land management is difficult as much of the area that would benefit is in private holdings, and the majority of these are private Indian allotments with 100 or more owners.

Population Status and Trend

There is no modeled population estimate for this herd. This population is believed to be stable, but has the potential to increase under more ideal habitat conditions. Many of the deer, particularly in the northern part of the management area, are resident deer. The population for Area 29 is well below the historic levels recorded for the Pinenut Mountains. Still, it is an area that offers a local hunting opportunity with a good buck point-class available and hunter success above the statewide average.

PRONGHORN ANTELOPE

Units 011 - 015, 021, 022, Washoe and Western Humboldt Counties
Report by: Chris Hampson

Survey Data

Four days of post-season helicopter composition surveys were dedicated to pronghorn during the second week of September 2006. A total of 1,139 pronghorn were classified with an average composition ratio of 36 bucks/100 does/51 fawns (Table 1). This is very similar to the 2005 ratio of 37 bucks/100 does/50 fawns.

Table 1. 2006 post-season pronghorn composition for Washoe County

Unit	Bucks	Does	Fawns	Total	Bucks/100 Does/Fawns
011	77	127	61	265	61/100/48
012-014	80	244	117	441	33/100/48
015	50	199	117	366	25/100/59
021-022	10	39	18	67	26/100/46
2006 Totals	**217**	**609**	**313**	**1,139**	**36/100/51**

Pronghorn fawn ratios continue to be very strong in all of the hunt units within Management Areas 1 & 2. The 2006 average fawn ratio of 51 fawns/100 does was almost identical to the 50 fawns/100 does observed in 2005. Fawn ratios were much improved in Unit 014 this past year and were classified at 49 fawns/100 does. In 2005, recruitment for pronghorn in Unit 014 was measured in the low 20's. Harsh winter conditions are thought to have played a major role in the low recruitment. Fawn ratios in Unit 011 have moderated downward but still remain very strong (Table 1). Recruitment in Unit 011 had been running between 60 and 70 fawns/100 does between 2003 and 2005. The most notable increase in recruitment was in Unit 015 where a ratio of 59 fawns/100 does was observed this year. This herd has struggled in the past but has shown an increasing trend over the last 2 years. The consecutive above-average precipitation years in 2004 and 2005 have improved habitat conditions for pronghorn in this unit.

The average buck ratio for pronghorn herds in Management Areas 1 & 2 remains similar to the buck ratio observed in 2005. However, some changes in buck ratios were observed within the various hunt units and pronghorn populations in 2006. Additional flight time was expended in Unit 015 this year in an effort to obtain a larger more accurate sample size (Table 1). Buck ratios obtained from surveys have fluctuated up and down in recent years partially due to fluctuations in survey effort and timing. This buck ratio is similar but below the 2004 buck ratio of 30 bucks/100 does. In Unit Group 021, 022, buck ratios dropped (Table 1). This buck ratio is believed to be skewed low due to the reduced survey effort and small sample size obtained this year. Buck ratios in the largest Unit Group 012-014 remain strong (Table 1). The observed buck ratio in Unit 011 which was high is more likely lower than the survey indicates. The excellent recruitment in 2005-06 was very evident as yearling bucks made up 42% of the buck sample in Unit 011.

Habitat

The above-average precipitation received during the winter and spring of 2005-06 provided the necessary moisture to improve forage quality, cover and water availability for pronghorn herds in Washoe County. Occasional thundershowers in July and August helped to alleviate the generally dry conditions. Precipitation receipts throughout Washoe County this past fall and the first half of the winter have been well below average. As of 1 January 2007, the Nevada Water Supply Outlook Report shows the various basins in Washoe County to be between 51 and 85 percent of average. Snow pack percentages for the basins are even lower and are between 49 and 62 percent of average. The first 3 weeks of February were also extremely dry. Finally, in late February and early March, significant moisture was received that may help to lessen the impacts from several consecutive months of below average precipitation.

Population Status and Trend

Washoe County pronghorn herds continue to do well. Recruitment rates remain strong and harvest data such as hunter success rates are near long-term averages. Pronghorn survival this winter is expected to be high due to the open conditions on many of the important pronghorn winter ranges. Several weeks of sub zero temperatures in late December thru mid-January should not impact herds significantly. Pronghorn should have entered into this winter in good physical condition due to the improved habitat conditions. Additional precipitation is needed this winter and spring in order to maintain the current water availability and provide good quality forage for pronghorn.

Units 031, 032, 034, 035, 051, Humboldt County

Report by: Ed Partee

Survey Data

Aerial pronghorn surveys were conducted during the middle of September 2006. Above-average water distribution encountered during the survey period allowed animals to distribute themselves over a large area making it difficult to locate animals. There were a total of 1,039 animals surveyed this year in Areas 3 and 5. This is up from the 971 animals classified during surveys in 2005. This survey yielded an overall ratio of 57 bucks/100 does/73 fawns. Average buck and fawn rations are showing increases. With these strong fawn ratios overall population numbers are steadily climbing in both management areas.

Habitat

Humboldt County received a great deal of moisture during the winter and spring of 2005-06. Forage conditions remained excellent during the entire year. Many pit tanks remained full during the summer months which are the most critical time of use for pronghorn. Many of the springs have been recharged over the last few years which have had a positive affect on water and forage availability. With the amount of moisture that was available, pronghorn were dispersed throughout their range in small groups. Humboldt County had several fires that occurred during the summer of 2006. The response to these fires was quick which minimized the amount of acreage lost. These fires occurred in Units 031 and 032 and caused additional loss of wildlife habitat. However, losses affecting pronghorn were minimal. With all the combined fires that have occurred in Humboldt County over the last 10 years and the amount of sagebrush, native grasses and forbs that have been lost, we may eventually start to see a decline in pronghorn populations. Humboldt County has been extremely lucky the last several years with mild winters. If a large snow event occurs and is followed by extreme cold temperatures we may witness a significant decline in these herds due to the loss of winter habitat.

Population Status and Trend

Area 3 has exhibited increases in the population levels since 2001. Each year in these combined units there has been an increase in the fawn ratio which has produced a steady increase in these populations. Area 5 has also seen an increase in the population. However, the increase in Area 5 did not start until 2003. Fawn ratios have fluctuated in Area 5 which may have caused the delay in population growth. Even with these fluctuations the estimated population for Area 5 has increased over 200 animals since 2003. Mild winters and significant amounts of precipitation in the spring and summer months have benefited these populations. Plenty of free water has been available throughout the year and no abnormal winter loss has been documented. Current trends in production and recruitment will provide for stable to increasing populations.

Unit 033, Sheldon National Wildlife Refuge: Washoe and Humboldt Counties

Report by: Chris Hampson

Survey Data

A portion of the survey flight time regularly expended on composition surveys for pronghorn on the Sheldon was purposely shifted to allow for additional flight time and surveys for pronghorn and bighorn sheep in other

hunt units within Washoe County. An adequate sample was obtained with the classification of 228 pronghorn. The sample provided a computed ratio of 60 bucks/100 does/22 fawns.

Fawn recruitment on the Sheldon dropped to a low level of 22 fawns/100 does this year. In 2005, the recruitment rate was measured at 48 fawns/100 does. The previous 6-year period fawn recruitment averaged 47 fawns/100 does. However, from 1991 to 2000, fawn ratios on the Sheldon averaged just 20 fawns/100 does, resulting in declining population trends during that time period.

Buck ratios on the Sheldon continue to be very high. This year's post-season buck ratio was 60 bucks/100 does. Quotas could easily be increased in this hunt unit to take advantage of the high number of bucks available for harvest without impacting the quality of the bucks taken.

While conducting pronghorn surveys in September of 2006, it was noted that varied weather patterns may have affected habitat conditions on the Sheldon this past year. For example, on Rock Spring Table, vegetative condition looked to be very good and water availability was excellent with most water sources half to three-quarters full. However, the northern half of the Sheldon appeared to be much drier and vegetative condition appeared to be poor. Many of the playas and lakes on the high elevation plateaus were completely dry. Large numbers of animals normally classified on the northern tables had moved to other lower elevation areas that could provide them with better quality forage and water.

Precipitation and snowfall amounts on the Sheldon are also well below average as of 1 January 2007. The lack of any significant precipitation has continued through the month of January and into February. However, the month of March has started out with above average snowfall that will help to alleviate the very dry conditions. With the irregular weather patterns experienced this past year, habitat conditions on portions of the Sheldon could get much worse.

Population Estimate and Trend

The below maintenance level recruitment observed this past year on the Sheldon will reverse the upward trend that this population has experienced over the last 7 years. Current habitat conditions that appear to be good in some areas but poor in others, combined with the projected below average winter moisture may hamper the herd's recovery. Despite harvesting 63 bucks from the Sheldon in 2006, buck ratios remain very high. For this reason, the population estimate for the Sheldon antelope herd has been adjusted upward, to bring it in line with the high number of bucks in the population, and the estimate now stands at 1,500 animals. Animal movement between the closed portion and open hunting areas is recognized and fluctuations are common. The population estimate for the Sheldon represents those animals that are likely to be available to hunters in areas that are open to hunting and does not include animals that move south to winter on the Sheldon from southern Oregon. Surveys on the Sheldon will be expanded in 2007 to further monitor the status of this herd.

Units 041, 042, Western Pershing and Southern Humboldt Counties

Report by: Kyle Neill

Survey Data

Units 041, 042 antelope composition surveys were performed from the ground over a 4 day period during the last week in September 2006 (Table 1). Mountain Ranges and areas surveyed included Selenite, Nightingale, Truckee, Sahwave, Kamma, Seven Troughs, Trinity, Majuba, Eugene, Jungo Farms and Rye Patch Reservoir.

Table 1. Pronghorn composition survey results for Units 041 and 042.

Year	Bucks	Does	Fawns	Total	Bucks/100 Does/Fawns
2005	98	225	143	466	43/100/63
2006	172	402	212	786	43/100/53
5-year average	98	243	117	458	40/100/48

Habitat

In 2006, 3 big game water development projects were constructed in the Granite Springs Wash area, which is located between the Lava Beds and the Seven Troughs Range. These guzzlers were built to further expand the unit group's antelope population into suitable habitat. Since construction, there has been documented antelope use on 2 of the 3 projects. Additionally, 3 more big game water development projects are scheduled to be constructed in the Trinity Range in 2007.

Several wildfires occurred in Units 041, 042 in 2006. The Poito Fire, which occurred on portions on the west side of the Selenite Range and across highway 447 into Unit 022, burned a total of 5,581 acres. A total of 3,300 acres were reseeded, of which approximately 1,700 acres were drill seeded with a sagebrush mixture in the Selenite Range. This area has previously burned and is moderately used by antelope throughout the year. Another wildfire, which burned 27,052 acres, took place on the north side of the Trinity Range. This fire primarily burned cheatgrass and left much of the shrub community intact. In order to protect the vegetation and soil impacted by these fires, BLM has prohibited grazing on the burned areas for a minimum of 2 years.

Population Status and Trend

Unit group's 041, 042's antelope population is now estimated at 1,400 animals. The previous year's estimate was 1,200 animals. This herd continues to show a strong increasing trend. Recently this can be attributed to 2 consecutive years of good fawn recruitment rates, relatively wet but mild winters and the fact that available water sources remained in good to excellent condition throughout the year.

As western Pershing County's antelope population continues to grow, it also continues to expand into new habitat throughout the unit groups. Field observations indicate more antelope in traditional habitat use areas and an increasing number of encounters with antelope in areas that were previously not utilized. Some herd expansion can be attributed to the repair of windmills by livestock permitees and the construction of big game guzzlers. Future construction of new water sources should further promote herd growth and expansion.

Units 061, 062, 064, 071, 073, North Central Elko County

Report by: Ken Gray

Tag Quotas and Harvest Results

One hundred and thirty-four tags were available for the regular rifle buck hunt in 2006. The 2006 quota represented a 46-tag (26%) decrease from 2005. In addition, 43 buck tags were issued in an emergency hunt that was initiated in response to the 2006 fires. There were 101 resident doe tags in the regular season and an additional 119 tags issued for the emergency doe hunt.

Survey Data

No survey was conducted in this unit group in 2006 due to ongoing emergency hunts.

Habitat

Approximately 363,000 acres of habitat burned within this unit group during the summer of 2006. The most devastating fires burned close to 27,000 acres of crucial winter range in the areas of Deeth, Elburz and Susie Creek.

The higher elevation habitats such as the Charleston area should start to show recovery within the next 5 years and may actually be improved as summer habitat if proper livestock grazing practices are implemented.The winter ranges however may never recover due to domination by cheatgrass and other invasive weeds.

In response to the fires, NDOW and the Elko BLM spent a considerable amount of effort and money seeding the most crucial habitats with native grasses, sagebrush and forage kochia.

The aroga moth has damaged the sagebrush component on hundreds of thousands of acres of habitat within this unit group. It is believed that the sagebrush damaged by this moth contributed to the devastating fire season experienced in 2006.

Houses continue to be built within crucial winter range, especially in the area of Ryndon. This urbanization, combined with the loss of habitat by fires, will severely limit the number of antelope this unit group can support in the future.

Population Status and Trend

In January 2007, 192 antelope (147 does, 42 fawns and 3 yearling bucks) were trapped from this herd and moved to west-central Nevada. These antelope were removed from winter ranges in Unit 073 that were impacted by the 2006 fires.

The population estimate decreased by approximately 350 antelope during the past year due to the trapping operation and the increased harvest. The population estimate is close to 750 antelope. The objective of the 2007 harvest recommendations will be to maintain the population between 650 and 750 antelope, which is compatible with their winter range.

Units 065, 142, 144, Southern Elko County, Northern Eureka County
Report by: Russell Woolstenhulme

Sixteen resident tags were available for the any legal weapon hunt in 2006 (2 additional for non-resident). Twenty resident tags for horns shorter than ears were available for the Eureka County portion of unit 144.

Survey Data

Post-season herd composition surveys were conducted from the ground in October 2006. A total sample of 169 antelope was obtained. The age and sex ratio of the sample was 48 bucks/100 does/54 fawns. In 2005 the sample of 246 antelope resulted in a ratio of 42 bucks/100does/47 fawns.

Habitat

Approximately 35,000 acres of habitat burned within this unit group during the summer of 2006. The Webb and Sneekee fires in particular affected range used by antelope during the summer and fall months. The Webb fire burned areas that were previously burned during fires in 1999. These burns should provide good summer and fall habitat again in the future. Most of the important antelope winter habitat in this unit group was un-affected by the burns. Winter habitat is a limiting factor within the unit, which may limit herd growth potential and may create depredation problems in Area 14 as antelope continue to disperse further into Eureka County.

Population Status and Trend

Population estimates for this unit group have increased steadily since 2000. Fawn production was above average and buck ratios remain high.

Unit 066, Owyhee Desert: Northwestern Elko County
Report by: Ken Gray

Survey Data

A helicopter survey was conducted in this unit in August of 2006. This was the first survey conducted in the past 8 years. A total of 308 antelope was classified with a ratio of 28 bucks and 31 fawns/100 does.

Habitat

The Winters and Amazon fires of 2006 and the Wilson Fire of 2005 burned in the southern portions of the unit. Antelope used most of this burned range during the summer and fall months. It is possible that in 5 to 10 years, with good grazing practices, the area will recover to provide good antelope habitat. Much of the sagebrush habitat within this unit has been afflicted by the aroga moth and is in extremely poor condition.

Population Status and Trend

The 2006 helicopter survey was valuable in assessing the current population level. The Owyhee Desert has remained stable but significant increases in the population have occurred on the west side of the Snowstorm Range. Based on this survey, the population estimate was increased by approximately 150 animals from last year's level.

Units 067, 068, Western Elko and Northern Lander and Eureka Counties

Report by: Ken Gray

Survey Data

A winter ground survey was conducted in January 2007 (Table 1).

Table 1. Observed buck ratios, fawn ratios and sample size for pronghorn in Units 067-068.

	2006	2005	1996-2005 Average
Bucks/100 does from surveys	48	47	44
Fawns/100 does from surveys	36	41	35
Sample size from surveys	1,027	769	391

Habitat

Huge range fires burned over 500,000 acres of antelope habitat within this unit group during the summer of 2006. Fortunately, most of what burned was summer range. This habitat has the potential to recover in 5 to 10 years to the point that it can be beneficial for antelope.

Wintering antelope are using the large seedings that were implemented during the past 12 years extensively. Antelope are especially utilizing the forage kochia associated with these seeded areas. Antelope winter use on kochia has averaged 30% in some areas over the past 3 years.

Population Status and Trend

This year's sample size obtained during the winter survey was the largest ever collected. It is believed that significant numbers of antelope wintering on the west side of the Izzenhood Range are coming from Units 051 and 066. A marking project is needed to determine where these antelope summer.

The current 067-068 Unit Group antelope population estimate is up slightly from last year's. One challenge with this herd is managing the harvest in relation to the relatively high percentage of antelope occupying private land during the hunting season. It is estimated that up to 30% of the antelope herds are on private fields not open to hunting.

Units 072, 074, 075, Northeastern Elko County

Report by: Kari Martin

Survey Data

Surveys resulted in 374 antelope being classified. The resulting age and sex ratios for the sample were 33 bucks/100 does/34 fawns. Both the buck and fawn ratios were down slightly from last year. The survey is

typically conducted between the archery and rifle season in this unit group due to the migration of antelope out of the Unit 072 into Idaho during and after the rifle season.

Habitat

The large amount of area that burned during the summers of 2000 and 2001 is providing additional habitat for pronghorn in most units. This additional habitat combined with adequate fawn production should allow this herd to continue to expand.

Population Status and Trend

Overall, this pronghorn herd appears to be increasing. The combination of above average spring and summer precipitation and milder winter conditions in the lower elevations contributed to good fawn survival. The extreme southern portion of this herd struggled in past years with the harsh winter conditions in the form of deep snow, causing them to seek more favorable conditions closer to towns. However, this past winter's more mild conditions allowed the pronghorn to stay in their more traditional wintering grounds increasing their survival.

Units 076, 077, 079, 081, 091, Northeastern Elko County
Report by: Kari Martin

Survey Data

Post-season surveys in October and January resulted in 202 antelope being classified. The resulting age and sex ratios for the sample were 32 bucks/100 does/41 fawns. The buck ratio was slightly higher than last year's ratio of 30 bucks/100 does, and the fawn ratio increased from last year's ratio of only 26 fawns/100 does.

Habitat

A Heritage project was granted to improve an artificial water source for this herd in Pilot Valley. An existing water development was an older style with the drinker separate from the tank and flush with the ground. This drinker although functional, in the past has filled with decaying Mormon crickets. Hopefully the development will be updated this summer to improve water quality. A pipe-rail fence will also be erected to allow wildlife to easily access the water while excluding horses and livestock.

Population Status and Trend

Overall, this pronghorn herd appears to be stable to slightly increasing.

This herd seems to be utilizing the northern areas of Unit 076 more than in previous years. This could be attributed to the large amount of area that burned in these units during the summers of 2000 and 2001. The fires that occurred in Unit 077 seem to be contributing to the increase of this herd as well.

Units 078, 105 – 107, 121, Southeastern Elko and Central White Pine Counties
Report by: Tony Wasley

Survey Data

No surveys were conducted in this unit group in 2006.

Habitat

The summer of 2006 was hot and dry. In areas where reliable water sources were present, large numbers of antelope could be observed. Steptoe Valley contains the bulk of the animals for this unit group. Antelope remain in areas as long as water remains available. Many of the drier areas throughout this unit group have

become uninhabitable for antelope during summer months because of low water availability. Antelope have been especially challenged in areas where they face stiff competition from wild horses for the little water that is available.

Population Status and Trend

The current population estimate for the 078, 105 – 107, & 121 Unit Group is stable to slightly up from last year and shows an increase for the fourth consecutive year. It is up significantly from past years and demonstrates a positive long-term population trend. This trend was bolstered by high fawn ratios in 2004 and even higher fawn ratios in 2005.

Units 101 – 104, 108, South Central Elko and Western White Pine Counties

Report by: Tony Wasley

Tag Quotas and Harvest Results

Seventy-three tags were issued for the rifle pronghorn buck hunt in 2006. Thirty-six tags were issued for the rifle pronghorn buck hunt in 2005. The 10-year average quota for this unit group was 40 tags.

Survey Data

No surveys were conducted in this unit group in 2006.

Weather and Habitat

The summer of 2006 was hot and dry. In areas where reliable water sources were present, large numbers of antelope could be observed. Ruby Valley, Long Valley, and Butte Valley contain the bulk of the animals for this unit group. Antelope remain in areas as long as water remains available. Many of the drier areas throughout this unit group have become uninhabitable for antelope during summer months because of low water availability. Antelope have been especially challenged in areas where they face stiff competition from wild horses for the little water that is available.

Population Status and Trend

The current population estimate for the 101 – 104, & 108 Unit Group is relatively unchanged from last year, which was up significantly from the previous year. Survey efforts in 2005 resulted in a sample size greater than the published population estimate from 2004. One of the largest contributing factors to the population increase in 2005 was an immigration of animals from an adjacent unit where antelope had been excluded from alfalfa fields via fencing. The long-term pattern is an upward trend, due to pronghorn releases (+86 in 2003) and good to fair levels of fawn recruitment. This unit group has been stable or displayed a growth trend for 7 of the last 10 years.

Units 111-114, Eastern White Pine County

Report by: Curt Baughman

Survey Data

Postseason surveys were not conducted in 2006. The age and sex ratios of the 2005 postseason sample were 37 bucks/100 does/52 fawns. These ratios were 35 bucks/100 does/31 fawns in 2004 and averaged 32 bucks/100 does/31 fawns for the previous 10 years (1994-2003). The 52 fawns/100 does documented during the 2005 survey is the highest recorded since 1977. Survey data from adjacent unit-groups and random observations point towards a second consecutive year of strong production and recruitment. Based on the 2006 harvest, the postseason buck ratio should have been 40 bucks/100 does.

Habitat

The higher precipitation levels of recent years have improved habitat conditions following the dry period of 1999 to 2003. Water distribution and the health of grasses, forbs and shrubs has improved. Significant late summer/fall green-up of grasses and forbs has occurred 2 out of the last 3 years. Following the 2005 water-year in which 160% of average moisture was received, the spring of 2006 witnessed vastly improved residual vegetative cover in areas where grazing pressure was not too high. This was beneficial to the survival of pronghorn kids. Although the winter of 2006-07 experienced a period of harsh temperatures, the thin, dry snow that accompanied this cold spell should not have been detrimental to pronghorn. The Ely BLM District is conducting prescribed burning and brush mowing projects in North Spring Valley that should prove beneficial to pronghorn. The current water-year precipitation total for Ely stands at 85% as of late March. Spring habitat conditions for pronghorn should be fair to good, depending on precipitation levels throughout the remainder of the spring.

Population Status and Trend

This pronghorn population has been increasing in recent years. Following the strong recruitment documented in 2006, recruitment is thought to be well above average again in 2007. Population modeling results in a 2007 population estimate that is roughly 200 animals higher than the 2006 estimate. Pronghorn should be in good condition coming into the spring season. Potential exists for further population expansion in 2007-08 unless habitat conditions deteriorate. The combination of an increasing post-season buck ratio and population estimate will result in higher tag quota recommendations for the 2007 season.

Units 115, 231, 242, Eastern Lincoln and Southern White Pine Counties

Report by: Mike Scott

Survey Data

Ground surveys were conducted for pronghorn in these units during September and October 2006. A total of 405 pronghorn was classified, consisting of 99 bucks, 205 does, and 101 fawns. These numbers result in a ratio of 48 bucks/100 does/49 fawns. Animals were found distributed throughout Lake, South Spring, Snake, and Hamlin Valleys.

Habitat and Population Status and Trend

BLM conducted a horse gather in February of 2006. Approximately 750 horses were gathered from Area 23. This gather should allow limited recovery of forage resources throughout the area, although wild horse numbers remain above the appropriate management level in the area. Pinyon and juniper invasion continues to limit pronghorn habitat throughout this area. Landscape scale projects would be required in order to increase available habitat for antelope. BLM and NDOW are planning to install 7 new water developments and rebuild another 3 in Area 23 for antelope. The installation of new water developments should allow antelope to utilize areas not currently being used while reducing competition with domestic livestock for forage and water. Additionally, BLM is planning to perform large-scale projects in Area 23 for the benefit of Sage Grouse. Some of these projects will likely entail treatment of senesced or degraded sagebrush. If any of these projects are indeed completed, pronghorn will likely benefit from increased forage. The pre-hunt population estimate for 2007 is 500 animals, compared to 450 in 2006.

Units 131, 145, 163, 164, Southern Eureka, Northeastern Nye, and Southwestern White Pine Counties

Report by: Mike Podborny

Survey Data

Post-season herd composition surveys were conducted from the ground from mid-September to late October 2006. All valleys were surveyed in the unit group and a total sample of 350 antelope was obtained. The age and sex ratio of the sample was 38 bucks/100 does/40 fawns. In 2005 the sample of 98 antelope resulted in

a ratio of 27 bucks/100 does/27 fawns. Antelope were classified on alfalfa fields in Antelope Valley, Jakes Valley, Little Smokey Valley, Newark Valley and Railroad Valley. The 10-year-average (1996-2005) fawn ratio was 28 and has ranged from 5 to 38 during that same time period.

Habitat

The Southwest Intertie Project (SWIP) is a large 500 kV power line proposed from Idaho to Las Vegas and will cross through Jakes Valley in Unit 131. This power line will be constructed in the next few years and the potential impacts to antelope are not anticipated to be severe but disturbance of habitat will occur.

Population Status and Trend

Fawn production was above average and the computer modeled population estimate indicates an upward population trend. This antelope herd has increased significantly in the past 20 years due to ingress of antelope from other areas, transplants, increasing habitat due to water developments and some favorable weather conditions. The larger population size and associated increased distribution has resulted in increased use of alfalfa fields by antelope over the years. Fencing of some fields and the installation of guzzlers to provide additional water away from fields has lessened the impacts of antelope on private land. As these antelope populations continue to increase in this area, the challenge will be to employ management that minimizes conflicts with private land.

Units 132 - 134, 245, Eastern Nye and Western Lincoln Counties

Report by: Mike Podborny

Survey Data

There were 72 antelope classified during limited ground surveys in Railroad Valley and a small portion of White River Valley. The age and sex ratio of this sample was 27 bucks/100 does/23 fawns. Although statistically data were weak, they suggest poor but average fawn production and recruitment with a healthy buck ratio. The major portion of White River Valley, Garden Valley, Coal Valley and Sand Spring Valley were not surveyed in 2006. There has been no significant post-season herd composition survey conducted in this unit group since 2002 when 238 pronghorn was classified resulting in an age and sex ratio of 28 bucks/100 does/6 fawns.

Habitat

Four water developments in Garden and Coal valleys that were over 20 years old and in disrepair are being completely rebuilt by the NDOW Guzzler Crew in the spring of 2007. These water developments will secure a reliable water source for the small existing herd and the proposed release of additional antelope in the winter of 2007-08. The Caliente Nuclear Train Route proposed by the Department of Energy (DOE) from Utah to Yucca Mountain will bisect Units 132 and 133. Negative effects related to fencing and other structures can be expected to impact this pronghorn antelope population. The Southwest Intertie Project (SWIP) is a large 500 Kv power line proposed from Idaho to Las Vegas and will bisect several valleys in this unit group. The potential impacts to antelope are not anticipated to be severe but disturbance of habitat will occur.

Population Status and Trend

Survey data has been insufficient for the last 4 years to accurately determine status and trend of this antelope herd. The harvest data, reported sightings and other incidental data indicate the population is stable at low numbers in 2007. This antelope population is at the southernmost extent of what is considered pronghorn habitat in Nevada with the southern portion being the transition between the Great Basin and the Mojave Desert. These desert conditions with low annual precipitation and hot temperatures are less productive in both feed and water availability than the more northern antelope habitats of Nevada. This results in smaller herds that are closely associated with the limited water sources for 6 months of the year or more. There is much of this low-density antelope habitat available with no antelope due to the lack of water. It is believed that increasing water availability is the best method for increasing the size of this antelope herd.

Units 141, 143, 151- 155, Eastern Lander and Eureka Counties
Reported by: Larry J. Teske

Survey Data

Post-season antelope surveys were conducted from the ground in September and November of 2006. Areas surveyed included Crescent Valley, Grass Valley, Antelope Valley, Reese River Valley, Monitor Valley and the north end of the Simpson Park Mountains. Three hundred seventy-seven animals were classified during post-season surveys. The resulting ratios were 42 bucks/100 does/35 fawns.

Habitat

The pronghorn populations in these hunt units continue to expand into recently burned areas. In many cases, the rehabilitation on the burned areas has resulted in better habitat conditions than was present before the burn. Also, the rehabilitated areas usually have tighter controls on livestock grazing which enables the plants to survive better. Areas seeded with forage kochia are especially attractive to antelope. In the case of the smaller burns, just the creation of openings in the brush has allowed for better antelope distribution.

Some of the expansion of the antelope herds is the result of better water distribution, as is the case in Crescent Valley. The Cortez Gold Mine needed to pump water out of their pits and re-inject it into the valley at other sites. Antelope quickly found these water sources and seem to be thriving.

Population Status and Trend

The overall fawn ratio of 35 fawns/100 does is sufficient to maintain the current population. Higher fawn ratios of 49 and 46 in Units 151 and 152 will allow for population increases in these units. The buck segment of the population is healthy as evidenced by surveys and a resident hunter success rate of 91% during the 2006 season.

Units 161, 162, Northern Nye, Southeastern Lander, and Southwestern Eureka Counties
Report by: Tom Donham

Survey Data

A total of 178 pronghorn was observed during the 2006 post-season survey period in Big Smoky, Monitor, Ralston, West Little Fish Lake, and West Stone Cabin Valleys, as well as Saulsbury Wash. The sample included 48 bucks, 107 does, and 23 fawns. Survey data indicate production rates remain low for the 161-162 pronghorn population. In 2005, a total of 78 pronghorn was classified including 20 bucks, 44 does, and 14 fawns. While the observed fawn ratio obtained in 2005 was the highest obtained in several years, production could only be considered fair even during that period.

Habitat

During January and February 2007, the Bureau of Land Management conducted several feral horse gathers in central Nevada. A total of 205 feral horses were removed from the Stone Cabin HMA, a portion of which lies within Unit 162. The removal of these feral horses should help improve forage conditions as well as provide some relief to critical water sources that have been severely impacted by feral horse use. Although the gathers are a step in the right direction, numbers are still above appropriate levels and impacts to pronghorn, other wildlife, and their habitats will likely continue.

Population Status and Trend

Pronghorn populations in central Nevada steadily increased during the mid 1980's due to favorable climatic conditions. This population growth was slowed and, in some instances reversed, by drought conditions experienced during most years from the late 1980's to mid 1990's. While pronghorn populations remained

relatively stable from the late 1990's thru the early 2000's, severe drought conditions experienced during 2002 and 2003 once again took a toll on these herds. Drought conditions can result in poor body condition of adult animals due to reduced nutrition, resulting in under weight fawns, as well as reducing fawn hiding cover during the time when they are most susceptible to predation. 2004 and 2005 saw some improvement in production rates due to slightly more favorable climatic conditions, and the 161-162 pronghorn herds received a short reprieve. In 2006, production levels remain below average and the herd will likely remain stable at best for at least the short-term.

Although pronghorn continue to struggle with poor production throughout most of Units 161 and 162, an increase in numbers over the past several years has occurred around agricultural areas in Big Smoky Valley, Unit 161. This increase can be attributed to transplants of pronghorn in neighboring units, as well as the availability of higher quality forage and more reliable access to water in these areas during critical periods. The current population estimate for the 161-162 pronghorn herd is approximately 250 adult animals.

Units 171 - 173, Northwestern Nye and Southern Lander Counties

Report by: Tom Donham

Survey Data

The 2006 post-season survey was shortened for Units 171-173 due to time constraints. During the survey, a total of 23 pronghorn was observed including 11 bucks, 10 does, and 2 fawns. The previous survey which occurred during the fall of 2005 saw a sample size of 90 pronghorn with 14 bucks, 57 does, and 19 fawns.

Population Status and Trend

Between 1988 and 2003, a total of 173 pronghorn were released into Ione Valley, Unit 172. Following these releases, some animals dispersed into adjoining areas which slowed the growth of the Management Area 17 pronghorn herd, but at the same time benefited surrounding areas.

While the largest portion of the Management Area 17 pronghorn herd currently inhabits the southern portions of Units 172 and 173, increases in pronghorn numbers occurring in agricultural areas in Unit 184 have begun to stimulate population growth in the northern reaches of 172. Throughout the rest of Area 17, pronghorn typically can be found in small, widely scattered groups. The Management Area 17 pronghorn herd typically experiences higher production rates than other central Nevada herds, and this trend has allowed the herd to increase while other herds have suffered during several recent drought periods.

Currently, the Unit 171-173 pronghorn population appears to be slightly increasing with a population estimate of approximately 150 adult animals.

Units 181-184, Churchill, Southern Pershing, Western Lander and Northern Mineral Counties

Report by: Jason Salisbury

Survey Data

Post season surveys were conducted from the ground in October 2007. A total of 142 animals were observed for a ratio of 62 bucks/100 does/57 fawns. This year's observed buck ratio was well above the 36 bucks/100does that was reported last year and the fawn ratio is slightly below the 65 fawns/100 does observed in 2006.

Habitat

A large capacity water development will be constructed in May of 2007 in the Broken Hills Unit 184 to provide additional water to wildlife inhabiting the southern end of Management Area 18.

Population Status and Trend

The current population estimate for the Management Area 18 pronghorn herd is 350 animals. This is a 66% increase over last year's estimate. The increase is the result of high fawn production and recruitment rates and the addition of 120 animals released into Units 181 and 183. In January 2007, 52 antelope from Elko County were released into the south-eastern side of Dixie Valley located in Unit 183. An additional 68 antelope were released at Bell Flat located in Unit 181. This herd should continue to grow and expand in density and distribution within Management Area 18. Churchill County's antelope herd has increased significantly over the past 10-years due to ingress of antelope from other areas. Some populations of antelope have taken up residence on alfalfa fields and may require future management actions to address problems that might arise.

Units 202, 204, Lyon and Mineral Counties

Report by: Jason Salisbury

A ground survey was conducted in February 2007. A sample of 125 pronghorn was classified with sex and age ratios of 40 buck/100 does/59 fawns. The fawn ratio that was obtained in 2007 is well above the 5-year average of 46 fawns/100 does.

Population Status and Trend

The Bodie and Wassuk population is showing a stable to slightly increasing trend. The current population estimate for Units 202 and 204 is 180 animals. The 2007 fawn ratio of 59 fawns/100 does will continue to help strengthen the overall population into the near future. Historically hunter success rates have been low for this unit due to the delayed migration of antelope into Nevada. Weather events usually aid in the movement of animals from California into Nevada but cannot be relied upon to move animals every year. Beginning in 2005 an October hunt was instituted for these units to take advantage of the late movement of pronghorn into these units from California. Hunter success has increased every year since the inception of the new October hunt. The 2005 season had a 42% hunter success rate and the during the 2006 season hunters harvested pronghorn at an 83% success rate. The 5-year average hunter success rate prior to the later October hunt was 24%. California still opts not to hold a hunt for this herd.

Units 203, 291, Lyon, Douglas Counties

Report by: Jason Salisbury

Survey Data

In September 2007 ground surveys resulted in the classification of 39 animals, which resulted in a composition ratio of 50 bucks/100 does/27 fawns. Areas surveyed include the Buckskin, Singatse, Artesia Lake area, and the Pinenut Mountain Range. The recruitment rate of 27 fawns/100 does is slightly below maintenance level and will not allow the herd an opportunity for growth.

Population Status and Trend

The number of antelope classified this year is up significantly from past surveys. Several new groups of antelope were located this past year in the Pinenut Mountain Range and classified for age and sex. These antelope were using high elevation basins located on tables within pinyon-juniper canopy cover type. Pinyon-juniper encroachment in many areas has affected the overall amount of useable antelope habitat. These populations of antelope are located in small groups scattered over a large geographic area. Observed fawn production and recruitment is at or below the level needed to maintain this population. Similar low fawn production rates have been observed throughout the population's history from introduction to present. Low fawn survival observed in these units may reflect the fact that this area is considered marginal antelope habitat. The population estimate for this herd is 50 animals.

Units 205, 206, Eastern Mineral County
Report by: Jason Salisbury

Survey Data

A record 95 antelope were surveyed during post season surveys conducted from the ground in October 2006. The sample provided a composition ratio of 54 bucks/100 does/ 52 fawns. Animals were found in Win Wan Valley, Whiskey Flat, and Calvada Summit areas.

Habitat

New large capacity water developments are needed to address current water availability requirements of this herd. Water development would also allow for the expansion of pronghorn into new and varying habitats. There are future plans to conduct maintenance on water developments located on Calvada Summit and Sunrise flat to allow antelope easier access to the water developments through better fence design and greater water collecting ability through improvements in gutter design.

Population Status and Trend

A total of 72 antelope were released into the southeast portion of Win Wan Valley (Unit 205) in January 2007. Field observations indicate that the release compliment has taken up residence in portions of Win Wan Valley.

The Area 20 antelope herd is spread out over a large geographic area. Small groups of antelope occupy small home ranges in the summer months in and around limited water sources located in the area. The population estimate for the Area 20 antelope herd is 300 animals. The release complement has increased the population by 33% over what was reported last year. This year's recruitment rate of 52 fawns/100 does should contribute to an increase in population growth in upcoming years. Overall, this population appears to be stable to slightly increasing.

Units 221 – 223, 241, Lincoln and Southern White Pine Counties
Report by: Mike Scott

Survey Data

Ground surveys were conducted for pronghorn in these units during September and October 2006. A total of 282 pronghorn was classified consisting of 60 bucks, 149 does, and 73 fawns. These numbers resulted in a ratio of 40 bucks/100 does/49 fawns. Animals were distributed fairly evenly throughout the major valleys in all units.

Habitat and Population Status and Trend

BLM conducted an emergency horse gather in Unit 223 in January of 2006. Although wild horse numbers remain over the appropriate management level, this gather should have limited benefits to pronghorn. BLM and NDOW are planning to install 3 new water developments and rebuild 3 old water developments that will benefit pronghorn. Additionally, BLM is planning to perform large-scale projects in Area 22 for the benefit of Sage Grouse. Some of these projects will likely entail treatment of senesced or degraded sagebrush. If any of these projects are indeed completed, pronghorn will likely benefit from increased forage. The pre-hunt population estimate for 2006 is 330 animals, compared to 290 in 2006.

Unit 251, Central Nye County
Report by: Tom Donham

Survey Data

A total of 50 pronghorn was observed during the 2006 post-season survey. The sample included 6 bucks, 31 does, and 13 fawns. The previous survey was conducted during the fall of 2005 and a total of 98 pronghorn was observed. The 2005 sample consisted of 24 bucks, 60 does, and 14 fawns. The majority of the sample during the 2006 survey was obtained near agriculture, and the obtained fawn ratio is believed to be somewhat inflated. It does appear however, that production has improved in Unit 251 over the past 2 years.

Habitat

During January and February 2007, the Bureau of Land Management conducted several feral horse gathers in central Nevada. A total of 461 feral horses were removed from the Stone Cabin, Reveille, and Saulsbury HMA's, as well as the surrounding area. The majority of these feral horses were removed from Unit 251. The removal of these feral horses should help improve forage conditions as well as provide some relief to critical water sources that have been severely impacted by feral horse use. Although the gathers are a step in the right direction, numbers are still above appropriate levels and impacts to pronghorn, other wildlife, and their habitats will likely continue.

Population Status and Trend

The Unit 251 pronghorn population experienced stable population levels for several years during the late 1990's, as did those throughout much of central Nevada. These herds experienced decreased production/recruitment during 2002 and 2003 due to extremely dry conditions, resulting in decreasing population trends. Despite improved climatic conditions in 2004 and 2005, the Unit 251 pronghorn herd suffered below average production during those years as well. While high numbers of feral horses have impacted the Unit 251 pronghorn herd overall, there have been increases in pronghorn numbers around agricultural areas. Presently, the population is showing a stable to slightly increasing trend. The pre-hunt population estimate for Unit 251 is approximately 180 adult animals.

ROCKY MOUNTAIN ELK

Units 061, 071, Bruneau River and Merritt Mountain Area: Northern Elko County
Report by: Ken Gray

Survey Data

A total of 697 elk was classified from a helicopter during November 2006. Sex and age ratios of the sample were 23 bulls/100 cows/43 calves (Table 1). The low bull ratio was likely related to a lack of helicopter time and poor survey conditions. The calf ratio was identical to the past 9-year-average.

Table 1. Observed bull ratios, calf ratios and sample size for elk in Units 061-071.

	2006	2005	1997-2005 Average
Bulls/100 cows from winter surveys	23	27	33
Calves/100 cows from winter surveys	43	37	43
Sample size from winter surveys	697	482	370

Population Status and Trend

This elk herd continues to increase and is now estimated at approximately 800 animals. Good recruitment levels resulted in about a 75 animal increase in this elk population. There is some evidence that suggests a small portion of the elk in this unit group may be leaving the area prior to the hunting season and moving into Idaho. The recommended tag quota should be higher than last year's quota due to the higher population estimate. In addition, a cow hunt will be initiated in this unit group in order to provide additional opportunity.

Units 062, 064, 066 - 068, Independence and Tuscarora Ranges: Western Elko and Northern Eureka and Lander Counties
Report by: Ken Gray

Survey Data

A total of 211 elk was classified from the ground and air during November 2006 and January 2007. Sex and age ratios of the sample were 40 bulls/100 cows/44 calves. The calf ratio was 14 calves per 100 cows higher than last year but still 5 calves lower than the previous 5-year-average. Table 1 depicts the survey data obtained for the past 5 years.

Table 1. Observed bull ratios, calf ratios and sample size for elk in Units 062-068.

	2006	2005	2001-2004 Average
Bulls/100 cows from winter surveys	40	22	37
Calves/100 cows from winter surveys	44	30	49
Sample size from winter surveys	211	138	95

Habitat

Range fires burned over 500,000 acres of rangeland within this unit group during the summer of 2006. These fires should promote grass at the expense of shrubs, which could benefit elk. The Boulder Valley elk fences have worked well in precluding elk use on the alfalfa while allowing elk to utilize the high quality winter ranges in the general vicinity.

Population Status and Trend

The elk population continues to grow in this area with the population being estimated at approximately 290 elk. In addition to good recruitment, the population estimate was adjusted upwards based on the number of elk observed during this year's surveys. The recommended tag quota for 2007 is expected to be higher than the 2006 quota based on a higher population estimate.

Units 072, 074 Jarbidge Mountains: Northern Elko County
Report by: Kari Martin

Harvest Data

Unit 074 was included in this unit group for the 2005 bull hunting seasons. Three of the thirty-two bulls harvested from this unit group were taken in Unit 074 during the 2006 season. As the elk herd continues to expand their range and increase in Unit 074, an antlerless hunt for both unit groups will have to be considered as elk populations approach objectives in the near future.

Survey Data

Post-season surveys conducted in December resulted in a record sample of 771 elk classified with observed sex and age ratios of 33 bulls/100 cows/50 calves. The post-season calf ratio was above the 5-year average production of 43 calves/100 cows.

Habitat

The Forest Service attempted a prescribed burn in Canyon Creek this past year. The conditions were too moist to reach the desired results at the time of ignition. The purpose of the burn was to remove dead standing subalpine fir trees and promote the release of aspen. Another attempt is scheduled for 2007.

Population Status and Trend

Following the reduction of the antlerless quotas in 2000, the Unit 072 elk herd has experienced an upward trend. This year's recruitment rate is good and will allow for an increase in the elk population. The *Jarbidge Mountains Elk Herd Management Plan* identifies an elk herd population objective of 1,000 animals. In order to slow down the growth of this elk herd as it approaches the population objective, and provide recreation, antlerless hunts in Unit 072 have been scheduled for the 2007 hunting season.

Unit 075, Snake Mountains: Elko County
Report by: Kari Martin

Harvest

Antlerless elk tags were increased in this hunt unit for the 2006 hunting season. In order to stay within the population objective of 100 elk outlined in the 075 elk sub-plan, adequate harvest of both sexes must be maintained. Since the first elk hunt in this unit during the fall of 1999, quotas have been significantly increased in response to the elk population growth and NDOW's responsibility to maintain the population objective.

Due to the fact that a significant portion of the Unit 075 elk herd were wintering in the adjacent Unit 074, the southern portion of Unit 074 was added to the antlerless hunt to increase harvest. As expected, most of the elk were found again in Unit 074 at the beginning of the antlerless hunt. Overall, any legal weapon hunters were successful in harvesting a record 40 cows. Most of the cow harvest was from the northern portion of this unit group, but several cows were harvested from a small herd located in the southern portion of the unit.

Survey Data

Post-season surveys resulted in the classification of 106 elk. The resulting ratio for this sample was 6 bulls/100 cows/26 calves. The sample size was less than the previous year. It is believed that some bull elk may move into the area from adjacent units during the rut from late August through October.

Habitat

A 16,720 acre wildfire burned in the Deer Creek portion of this unit last summer. Although the initial impacts to wildlife are negative, the elk herd utilizing this area will more than likely benefit in the next several years due to the release of the perennial grasses and forbs as the burn recovers. It will be several years until the brush component and aspen begin to recover.

Population Status and Trend

This year's observed recruitment rate of 26 calves/100 cows is below last year's ratio of 37 calves/100 cows. Despite the difficulty of the antlerless hunt, a sufficient number of cows and calves were harvested to reduce the elk herd to within population objectives.

Units 076, 077, 079, 081 Thousand Springs, Goose Creek, and Pequop Mountains Area: Northern Elko County

Report by: Kari Martin

Harvest

In 2006, bull tags slightly decreased in this area, and antlerless tags increased. This was in response to a good bull harvest the previous year and the herd reaching the population objective set for the area. Bull hunter success was above expectations with an eighty-percent success rate realized by any legal weapon hunters. Antlerless hunter success was slightly lower than expected, but effective in reducing the overall population of this growing herd.

Survey Data

Post-season surveys resulted in the classification of 558 elk and a ratio of 38 bulls/100 cows/55 calves. The observed bull ratio was slightly above the five-year average of 35 bulls/100 cows, and the calf ratio was also higher than the five-year average of 47 calves/100 cows.

Habitat

Elk in this unit group are responding well to the large wildfires that burned a majority of this unit group in 1999 and 2000. Most of the burns have a good mix of perennial grasses and forbs coming back. The majority of the water developments proposed for the area have been built and are being used by elk. This increased water availability is helping distribute the elk throughout the area. It will be important in the future to replace existing cable fences with pipe-rail fences on the water developments in an attempt to more effectively exclude livestock.

A private consultant conducted a habitat monitoring study for the BLM to assess elk use of vegetation at current elk densities since the population objective has been reached. The results of that study should be available later this spring.

Population Status and Trend

The 076, 077, 079, 081 Unit Group elk herd continues to experience an upward trend with a ten-year average recruitment rate of 46 calves/100 cows. Above normal precipitation in both the spring and summer followed by a mild winter is expected to result in good calf survival.

A good majority of this unit group is comprised of checkerboard lands, meaning every other section is either public or private. The elk are spending a good deal of time on private lands in this area. There are currently seventeen landowners that participate in the elk incentive tag program and they qualified for 23 elk incentive tags in this unit group.

It should also be noted that the boundary of Unit 079 was changed this past year to separate the North Toano Range (079) from Pilot Mountain (now 091). Hunters that draw this hunt unit group will now be able to hunt Unit 079, along with the 076, 077, and 081 hunt units.

Units 078, 104, & 105, Spruce Mountain: Elko County
Report by: Tony Wasley

Tag Quotas and Harvest Results

In the sixth year of this hunt, four any legal weapon tags were available and three hunters were successful. For specific 2006 hunting results, please refer to Harvest Tables in the Appendix Section.

Survey Data

No elk specific surveys were conducted for this unit. However, incidental to helicopter deer surveys a total of 95 elk was observed, with ratios of 44 bulls/100 cows/46 calves. Both the bull ratio and calf ratio for this unit group are strong. This is the highest calf ratio observed in this unit group for several years.

Weather and Habitat

Winters have been mild in this area and adult elk appear virtually unaffected by the winter. Survey data suggests that calf production and recruitment may have benefited from the 2005/2006 above average winter moisture and unusually wet Spring in 2006. Increased precipitation, seedings, chainings, and increased water availability via guzzlers, could all be helping the Spruce Mountain elk herd overcome the low recruitment this population previously suffered.

Population Status and Trend

In the winter of 1997, 146 elk were released in Unit 105 on Spruce Mountain. It has been over 10 years since the releases and the elk have established themselves throughout Unit 105. Although production has been low, several mature bulls have been observed and harvested. The herd appears to be expanding its distribution, as elk have been observed moving north into Unit 078. The low levels of calf recruitment previously observed in this unit have improved. We are currently in the third year of a predator management project designed to reduce impacts of coyotes and lions on deer and elk production. Deer and elk recruitment rates will be monitored and compared to other herds in an attempt to evaluate the relative effect of intensive predator control on production rates. Harvest management is designed to promote herd growth towards the population objective of 340 elk. Additionally, several habitat projects in the area, including chainings, seedings, and water developments, should assist the population.

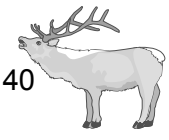
Unit 091 Pilot Range, Eastern Elko County
Report by: Kari Martin

Survey Data

Ground surveys conducted on both the Utah and Nevada sides of Pilot Mountain resulted in the classification of 47 elk. The resulting ratio for this sample was 16 bulls/100 cows/36 calves. Sample size was down from the previous year's survey.

Population Status and Trend

The population model for Unit 091 predicts a 2007 pre-hunt adult elk population of approximately 160 elk. For the 2006 hunting season, Utah hunters harvested three bulls and Nevada hunters harvested four bulls (one was a PIW tag holder). The elk quota is allocated equally each year between Nevada and Utah. Bull quotas for 2007 will be slightly higher than the previous year. Antlerless harvest has been discontinued for this elk herd at the present time.



Unit 091 was formerly designated unit 079. Hunters that draw this tag will now only be able to hunt Pilot Mountain (both in Utah and Nevada) with the new western boundary being the Pilot Valley Road.

Unit 101 – 103, East Humboldt and Ruby Mountains: Elko County
Report by: Tony Wasley

Tag Quotas and Harvest Results

After several years of gradual reductions in the cow tag quota for this unit group, 2006 saw a moderate increase in tags from 30 tags in 2004 & 2005 to 45 in 2006. The bull tag quota also increased from 15 in 2004 & 2005 to 20 in 2006. Both cow and bull tag quota increases were warranted by the increase in hunter success and increase in elk observed in these units.

Survey Data

Specific elk surveys are not conducted this unit group, but intensive helicopter surveys are conducted for deer, bighorn sheep, mountain goats, and pronghorn. Elk observations are documented during these surveys, when hunters and others report sightings, or when landowner complaints are received and investigated. Incidental to other wildlife surveys in the area during 2006, 19 elk were observed from the helicopter in these units. Only five different landowners have complained of elk use or damage over the past eight years.

Population Status and Trend

This is a depredation hunt with the objective of eliminating elk or keeping elk numbers at a level where depredation on agriculture does not occur and a viable elk herd does not become established. This hunt has been very effective to that end. At this time, it is believed that there are very few if any yearlong resident elk in these units. Observations of individual elk have been reported and small groups of elk have been found, within the unit, crossing the unit boundary, or near the periphery of these hunt units. However, despite these periodic observations, the population remains at extremely low levels throughout most of the hunt units.

Units 111 - 115, 221, 222, Schell, Egan, and Snake Ranges: Eastern White Pine, and Northern Lincoln Counties
Report by: Curt Baughman

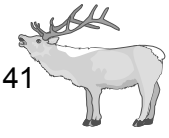
Seasons, Tag Quotas and Harvest Results

The total approved quota of 1,105 tags in 2006 was down from the record 1,272 tags approved in 2005. Management objectives for the 2006 harvest were a static overall population trend and a lower postseason bull/100 cow ratio. To this end, a record bull quota was recommended while fewer antlerless tags were offered. Seven-hundred and one total bull elk tags were recommended in 2006 with 630 approved by the Wildlife Commission. Elk hunters reported a record harvest of 548 elk in 2006 including 325 bulls and 223 antlerless elk. The bull harvest exceeded the antlerless harvest for the second consecutive year.

The point class of the 2006 harvest was an unprecedented 72% 6-point or better bulls, up from 65% in 2005 and 69% in 2004. In larger herds, point class data correlates roughly with the average age of harvested bulls. The high point class of the 2006 harvest supports the continued presence of a strong age structure in the population.

Survey Data

The 2006-07 winter survey was flown in combination with a postseason deer survey and occurred between December 19 and January 8. Increased flight time resulted in expanded area coverage compared to the shorter survey conducted during 2005-06. A record sample of 2,611 elk was classified with sex and age ratios of 31 bulls/100 cows/48 calves. An additional 135 elk were classified, but removed from the sample after they were determined to be elk from the Goshute Reservation. An additional 320 elk were observed on



the reservation but were not classified. During a brief survey in 2006, 1,696 elk were classified with resulting ratios of 17 bulls/100 cows/42 calves. Survey sample composition has averaged 31bulls/100 cows/42 calves for the previous ten years (1996-2005). The previous 5-year-average (2001-05) sample size was 2,090 elk. In addition to increased flight time, the survey benefited from cold temperatures and thin, but persistent snow cover. The timing of the survey just after the last bull hunt may have resulted in yearling bulls being strongly associated with cow/calf groups. For the same reason, isolated bull groups were small and scattered which made it more difficult to sample older bulls.

Hunters were asked to provide incisor teeth from bulls in the 2006 harvest. These elk teeth were then aged by an independent laboratory. The purpose was to obtain accurate age data which helps biologists understand the age structure of the herd. When combined with harvest and herd composition data, such data improves NDOW's population models and estimates. Teeth were obtained from 47% of the bulls harvested in this unit group. Ages ranged from yearlings to 13 years and indicate an average age of 5.9 years for bulls in the 2006 harvest. Similar studies in 2001-2003 yielded average ages of 5.0, 5.2 and 5.6 years, respectively, for bulls in the harvest.

Habitat

Habitat conditions improved between 2004 and 2006 due to improved precipitation. Moisture received during the winter of 2004-05 was the highest since the winter of 1968-69. Precipitation received in the Ely area during the 2005 calendar year was 136% of normal. This brought substantial improvements in cover, water distribution, forage quantity and forage quality. These improvements were maintained and enhanced in 2006 by precipitation levels that remained above-average through July. Improved habitat conditions were reflected in the high calf recruitment observed during the latest survey. Since July, drier conditions have returned with precipitation totals of 70% over that period. As of the end of March 2007, the precipitation total for the current 2006-07 water-year stands at 85%. Although habitat conditions may stabilize or decline somewhat in 2007, overall conditions should remain average or above. A cold period experienced during the recent winter was of little consequence to elk. Snow depth was insufficient to restrict elk distribution or access to forage.

Population Status and Trend

This elk herd continues to support a high bull to cow ratio and a strong component of mature bulls in the population. This is supported by computer model estimates, age data from tooth analysis and a record percentage of 6-point and better bulls in the harvest. While some unit populations have been increasing towards objectives, other units have been managed for stable or decreasing numbers. Population modeling over the past four years has focused on a better accounting of the bull segment within the population. Age data collected during four of the last six years has forced a higher estimate of the bull to cow ratio. Age data, as well as strong 2007 calf recruitment recruitment support a higher population estimate. Quota recommendations for 2007 will increase to meet the objectives found in the White Pine County Elk Subplan and the Statewide Elk Species Management Plan.

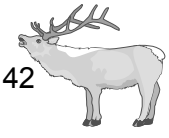
Distribution of elk within this unit-group continues to improve. Improving distribution has been accelerated by improved habitat conditions experienced over the last two years. Continued good body condition of elk should result in calf production in 2007 that is average or above.

Units 121, a portion of 104, 108 Cherry Creek, North Egan, Butte and Medicine Ranges: Northern White Pine County

Report by: Russell Woolstenhulme

Survey Data

Winter helicopter surveys conducted during 2007 resulted in the classification of 70 elk. Sex and age ratios from the sample were 61 bulls/100 cows/33 calves. The high bull ratio is likely a result of a lack of survey time, which limited the number of cow groups that were found in comparison to the number of bull bachelor groups found. The calf ratio is a very close to the 5-year average of 37/100 cows.



Habitat

Precipitation for Unit 121 has been below normal for the winter and spring of 2006-2007, which if the dry conditions continue throughout the summer months could result in less than desirable habitat conditions for the 2007 herd year. A small fire north of Piscevich Summit and vegetation modification in Smith Valley in the Egan Range could provide some quality elk habitat in the next few years. Horse round-ups were conducted in the Cherry Creek Range and Butte Valley during the summer of 2006, which undoubtedly will help habitat conditions for elk as well.

Population Status and Trend

This elk herd has increased slightly over the last few years; however increases have come slowly due to limited calf production. An absence of an antlerless elk harvest should help facilitate the maintenance and continued slow growth of the herd. Bull tag quota recommendations are expected to be similar to last year.

Units 131,132, White Pine, Grant and Quinn Canyon Ranges: Southern White Pine and Eastern Nye Counties

Report by: Mike Podborny

Survey Data

A post-season herd composition survey was conducted by helicopter in early January 2007. The survey was conducted in conjunction with a mule deer survey in the central and eastern portion of the White Pine Range and eastern portions of the Horse Range and Grant Range. A total of 191 elk was classified during the survey; a record sample for this unit group even with portions of the area not surveyed. The resulting age and sex ratio was 28 bulls/100 cows/ 50 calves. There was no survey conducted in 2006. The 2005 survey resulted in 110 elk classified as 18 bulls/100 cows/35 calves.

Habitat

A wildlife water development was built by volunteers working with the Forest Service and funding from the RMEF in the Monte Cristo area of Unit 131. A cooperative project between NDOW, the Forest Service and the permittee in the Cottonwood drainage of Unit 131 began in 2006 involving various fencing strategies to protect aspen and riparian areas from elk and livestock. A livestock permittee with sportsman volunteers extended pipelines from 2 springs in the Grant Range to distribute livestock use and improve water for wildlife. The Forest Service and RMEF funded this project. In 2007, an elk-proof fence will be constructed around a small alfalfa field in Unit 132 to exclude 35 elk that were using the field in 2006. This project will be paid from the Elk Depredation fund.

In December 2006, 4 new wilderness areas were designated in Unit 131 as Bald Mountain, Red Mountain, Shellback and White Pine Range totaling 119,000 acres. The existing Currant Mountain wilderness was also expanded by 10,700 acres. The wilderness designation will restrict off road travel, wind energy development, mining and oil and gas exploration. Habitat projects such as water developments and vegetation manipulation will be limited in wilderness areas.

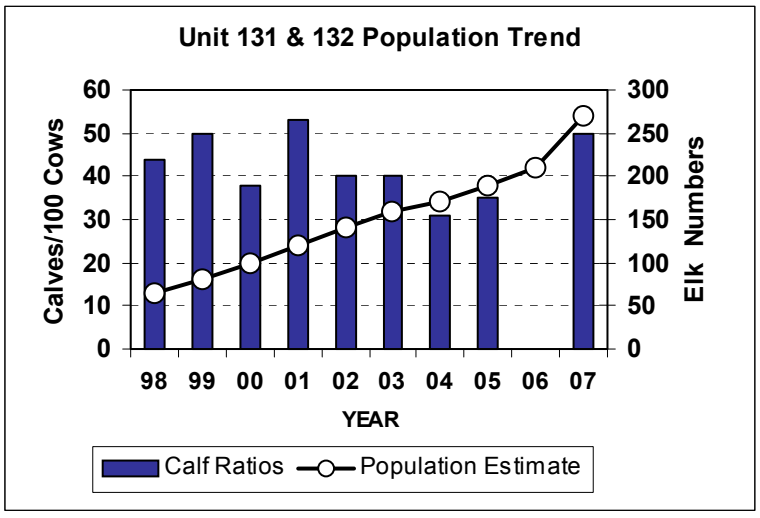
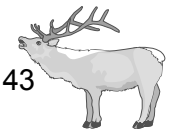


Figure 1. White Pine, Grant, and Quinn Canyon Ranges elk population calf recruitment trends.



Population Status and Trend

This elk herd continues to grow in size and distribution with a 2007 population estimate of 270 (Figure 1).

The population objective in the White Pine County Elk Management Plan for Unit 131 is 300 elk with Unit 132 having no management objective for elk. Antlerless hunts will be implemented in Unit 131 starting in 2007 to slow growth in this elk population as it approaches the objective level. The revision of the White Pine County Elk Management Plan, which began in December 2003, has draft language to combine Units 132 and 131 with a single objective of 300 elk in both units. There is a tremendous opportunity to improve habitat for elk and other wildlife through vegetation projects in the extensive Pinion/Juniper forests that exist throughout both these units. However, the population objective will be reached without the aid of any projects and the prospect of increasing the population objective is slim.

Units 161 - 164: North-Central Nye and Southern Lander and Eureka Counties

Report by: Tom Donham

Survey Data

The winter elk herd aerial composition flight took place in conjunction with post-season deer surveys during this past survey period. The flight was conducted in December 2006 and a total of 197 elk was observed. The sample included 31 bulls, 121 cows, and 45 calves. The late fall/early winter period was very dry, and a lack of moisture in the form of snow made survey conditions difficult. Nearly all elk groups were observed at over 8,700 feet in elevation, and in or near thick cover. Due to difficulty in locating cow/calf groups, very little time was spent pursuing a representative bull ratio during this survey period. The observed calf ratio indicates that the Management Area 16 elk herd again experienced good production in 2006. The previous survey took place in late January 2006, and due to much more favorable survey conditions, a sample o 395 elk was observed. The sample included 32 bulls, 260 cows, and 103 calves.

Population Status and Trend

The Unit 162 elk herd is the result of a release of 50 elk in January 1979. Following the 1979 release, the herd increased steadily, and the inaugural elk hunt in Unit 162 took place in 1984. From 1984 to 2000, tag quotas remained conservative in order to allow the herd to expand. During that time frame, the herd was being managed under guidelines set in place by the Central Nevada Elk Interagency Elk Agreement. The agreement limited the herd's size to approximately 425 animals.

During the 2000-2001 elk season, the tag quota was increased significantly in an effort to remain in compliance with the population "cap" set forth in the agreement. About this same time, the Nevada Board of Wildlife Commissioners asked the Nye County Advisory Board to Manage Wildlife to take the lead in creating an elk sub-plan covering all of central Nevada in accordance with the Nevada Elk Species Management Plan. The new plan, the Central Nevada Elk Plan, was created through a coordinated effort between the Nevada Dept of Wildlife, federal land management agencies, livestock and farming representatives, sportsmen, county representatives, and the general public from around the state. Following a long and arduous process, the plan was completed and approved by the Commission in January 2004. This new plan provides management direction for both Management Areas 16 and 17. New population objectives were also set in place by the plan allowing for growth in the Management Area 16 elk herd. During the 2004-05 elk season, reductions in tag quotas reflected this change in harvest strategy. Reduced antlerless elk harvest and good production have resulted in an increasing trend for the Management Area 16 elk population.

While the majority of the Management Area 16 elk herd occupies the Monitor Range, Unit 162, more elk have begun to disperse into adjoining units over the past few years. A small herd has established itself in Unit 163, the Hot Creek Range, and observations in the Toquima Range, Unit 161, have become more common recently. Elk movement from Management Area 16 to Management Area 17 has also resulted in an established herd in the Toiyabe and Shoshone Ranges, Units 172-173.

The population model for Unit Group 161-164 predicts a pre-hunt adult population estimate of approximately 530 animals.

Unit 231, Wilson Creek Range: Lincoln County
Report by: Mike Scott

Survey Data

Aerial surveys were conducted during February 2007 and resulted in a total of 375 elk observed. The classification of these elk was 128 bulls, 169 cows, and 78 calves. This results in a ratio of 76 bulls/100 cows/46 calves. Of the 128 bulls observed, 53% were classified as spikes to 4-points. The previous survey was conducted during February 2006 in Unit 231 and resulted in the classification of 208 elk. These included 63 bulls, 94 cows, and 51 calves, for a ratio of 67 bulls/100 cows/ 54 calves.

Habitat

BLM conducted a horse gather in Area 23 in February of 2007 in which a total of 750 horses were gathered. Despite the gather, wild horse numbers remain above the appropriate management level and are having a detrimental effect on elk habitat. Many of the burned and chained areas that provide forage for elk are no longer being used by elk since large numbers of wild horses have utilized most of the forage. A wind energy company is proposing to install one hundred twenty 400' tall wind-powered generators on Table Mountain and another eighty on Mount Wilson. This would have long lasting and widespread detrimental effects to the elk population in Area 23. Table Mountain is likely the heaviest use area for elk in Area 23 and the effective elimination of this habitat would cause elk to utilize other areas which would increase depredation complaints as well as increase competition with livestock for available water and forage.

Population Status and Trend

According to the *Lincoln County Elk Management Subplan*, which was approved by the Wildlife Commission in 1999, the Nevada Department of Wildlife will maintain the number of elk in the area at approximately 350 animals. Quotas recommended for the 2007-08 season will reflect the Departments' commitment to maintain the elk population near this level. Area 23 sits right in between Area 22 and Utah's Southwest Desert unit, both of which have much higher populations of elk. The Area 23 elk herd can see large increases in the population due to movement of elk across area and state borders. During the 2006-07 elk seasons, a total of 133 elk was harvested from Unit 231. The computer-generated population estimate for 2007 is 450 animals.

Unit 241-242, Delamar and Clover Mountains: Lincoln County
Report by: Mike Scott

Survey Data

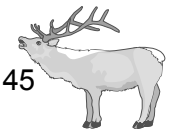
Surveys were conducted during February 2007, but did not result in any elk being observed. The previous survey, conducted in February 2006 also did not result in any elk being observed.

Habitat

Wildfires burned significant areas in Area 24 during July of 2005. Large expanses of pinyon-juniper in the Clover and Delamar Ranges were burned. These areas were surveyed during both elk and mule deer surveys and appear to be quite suitable for elk. The densities of elk are so low and the areas so vast that finding elk in these areas would be the equivalent of finding a needle in a haystack.

Population Status and Trend

Six elk were harvested from Area 24 during the 2006-07 hunting season. These included two cows, one calf, and three bulls. The computer-generated population estimate for Area 24 is 60 animals, similar to the 2006 estimate.



Unit 262, Spring Mountains: Clark and Southern Nye Counties
Report by: Patrick Cummings

Survey Data

In January 2007, a 2.9-hour aerial survey conducted in the Spring Mountains yielded a sample of 60 elk. The observed sex and age ratios were 9 bulls and 24 calves per 100 cows. The noted calf-to-cow ratio was among the lowest on record. As in past years, the brief aerial survey was focused in the area around the Cold Creek Community. Elk were encountered on the northeast and south sides of Willow Peak and in the Willow Creek Drainage. No elk were encountered on the McFarland Burn.

Habitat

Severely degraded vegetative conditions on the McFarland Burn were noted in 6 aerial surveys conducted between 2002-07, and likely the reason fewer elk have been encountered in the area. Degraded habitat is largely the result of a serious over population of feral horses superimposed on effects of drought conditions in three successive years (2000-02). The number of horses observed in the Cold Creek area has consistently far exceeded the AML (Appropriate Management Level) of 26 horses set by the United States Forest Service (USFS) as written in the General Management Plan for the Spring Mountains National Recreation Area (SMNRA). Despite above average precipitation receipts in 2003 and 2004, elk habitat on McFarland Burn remains in poor condition due to reduced presence of preferred forage species.

In September 2005, incidental to the aerial elk survey, 152 horses were observed. In 2004, 68 horses were encountered, and in 2003, 146 horses were noted. Severe drought conditions prevailed in 2002. Conservative counts of horses during aerial elk surveys conducted in January and October 2002 yielded totals of 159 and 106, respectively.

In December 2005, the Las Vegas District, Bureau of Land Management (BLM) issued a Decision Record and Finding of No Significant Impact for establishment of Appropriate Management Levels (AML) in the Johnnie, Muddy Mountains and Wheeler Pass Herd Management Areas (HMA). The established AMLs for horses in the Johnnie HMA and Wheeler Pass HMA are 0 and 47-66, respectively. The established AMLs for burros in the Johnnie HMA and Wheeler Pass HMA are 54-108 and 20-35, respectively.

In January 2007, BLM and USFS conducted gathers of feral horses and burros in the Johnnie HMA and Wheeler Pass HMA. Through theses efforts, 368 horses and 400 burros were captured. In the Wheeler Pass HMA, of the 289 horses gathered 240 were removed and 45 were released back into the Spring Mountains. BLM has indicated 61 horses were left in the Wheeler Pass HMA. Thirty-seven burros captured in the Wheeler Pass HMA were removed, resulting in an estimated 30-45 burros remaining in the HMA. In the Johnnie HMA, of the 79 horses captured 49 were removed and 30 were released back into the Spring Mountains. BLM has indicated 41 horses were left in the Johnnie HMA. All of the 363 burros gathered in the Johnnie HMA were removed, resulting in an estimated 75-110 burros remaining in the HMA.

Evidence of elk avoidance of roads and decrease in habitat use adjacent to roads is abundant in literature. Moreover, avoidance behavior becomes exacerbated in roaded areas adjacent to openings (burns) and meadows. Based on well-documented findings, another factor that has influenced elk distribution has been increased off-highway vehicle (OHV) use. In recent years, recreational use of OHVs in the Cold Creek area and on the McFarland Burn has increased substantially.

In June 2004, the Humbolt-Toiyabe National Forest issued a Decision Notice and Finding of No Significant Impact for Spring Mountains National Recreation Area Motorized Trails Designation Project. The decision to implement alternative five (with modifications) as summarized in the respective Environmental Assessment involves minimal closure of newly established roads on the McFarland Burn. Thus, the recently authorized management prescription for motorized trails ensures the status quo on the McFarland Burn for the foreseeable future.

Population Status and Trend

Elk in Unit 262 have existed on a low nutritional plane limiting reproduction and recruitment. In addition, increasing levels of motorized recreation have served to harass and displace elk in the Spring Mountains.

The population estimate for the elk herd inhabiting the Spring Mountains is 110, and reflects a decrease relative to the estimate (120) reported last year. Calf recruitment in recent years has been below levels necessary to maintain the population. Elk habitat quality throughout this unit is marginal. Formerly, under ideal conditions marked by lower horse numbers and normal precipitation receipts, the McFarland Burn afforded early seral, quality forage necessary for maintenance, growth and reproduction. In the near future, meaningful efforts to improve elk habitat must entail management of horse and burros numbers consistent with AMLs and completion of habitat improvements. Elk habitat in the Spring Mountains can be enhanced through seeding areas recently burned and by increasing water availability.

DESERT BIGHORN SHEEP

Units 044, 182, East and Stillwater Ranges: Pershing and Churchill Counties
Report By: Jason Salisbury

Survey Data

Biologists conducted aerial bighorn composition surveys within this Unit Group in October 2007. Within Unit 182, the Stillwater Range, the crew observed a sample of 63 bighorn sheep, which yielded a ratio of 36 rams/100 ewes/54 lambs. Within Unit 044, the East Range, biologists classified 33 bighorn sheep with the resultant ratio of 31 rams/100 ewes/75 lambs. The overall lamb ratio for the unit group was 61 lambs per 100 adult ewes.

Population Status and Trend

The desert bighorn population in the Stillwater Range is stable. There is considerable herd movement between the southern portion of the East Range and the northern part of the Stillwater Range. The East Range population seems to be stable to slightly increasing at this time. If the October lamb cohort experiences high survivability into 2007 late summer breeding season then the resulting recruitment will contribute to herd growth. Thus, the population estimate for the Stillwater/East Range herd is 190 animals this year, compared to 180 in 2006.

Units 131, White Pine Range: Southern White Pine and Eastern Nye Counties
Report by: Mike Podborny

Background

The White Pine Range has been home to a small remnant herd of desert bighorn sheep for many years. The herd remained at very low levels since the 1970's. In 1999 25 desert bighorns were translocated into the White Pine Range from the Monte Cristo Range. This augmentation consisted of 3 rams, 13 ewes and 9 lambs (5 males and 4 females). Six radio-collared ewes dispersed into 3 distinct areas after the release. Two radio-collared ewes remained in the White Pine Range, moving up in elevation to live near the crest of the range above the release site and wintering on the hills north of Currant. Another radio-collared ewe united with 2 non-collared ewes from the release complement to move 10 miles northwest to take up residence in the Duckwater Hills, still within Unit 131. The other 3 radio-collared ewes were joined by a young ram and another ewe from the release and moved over 30 miles west of the White Pine Range to the Pancake Range of Unit 164.

Survey Data

Several survey attempts have been accomplished; yet have always resulted in observations of small numbers of bighorns. In January 2004 biologists observed 11 bighorns from the helicopter comprised of 3 rams, 5 ewes and 3 lambs. Biologists located 10 bighorn rams in the Currant Hills incidental to a December 2004 post-season deer survey. A direct ground survey conducted in March 2006 resulted in the classification of 10 rams, 2 ewes and 1 newborn lamb. A summer ground survey conducted in June 2006 resulted in 8 ewes and 5 lambs classified. Most recently biologists conducting an aerial elk and deer survey in January 2007 were able to make a quick survey of bighorn habitat. As a result they were able to classify 20 bighorns from the helicopter, resulting in a ratio of 166 rams/100 ewes/67 lambs.

Habitat

The desert bighorn sheep in the White Pine Range live in the southwestern portion of Unit 131 in association with the Currant Mountain Wilderness. Some bighorns have summered in the upper elevations near Currant Peak and at Corduroy Mountain and pass the winter at lower elevations to the south. The low hills north of Highway 6 and Currant are considered the main winter range within Unit 131 although some bighorns reside

here throughout the year. Grass, forbs and browse are available throughout the occupied habitat and few other wild or domestic ungulates utilize the same range. Tree cover ranges from sparse in the hills near Currant to very dense at mid to upper elevations. Water is limited to scattered springs within the wilderness with snow at higher elevations. The Forest Service and sportsman volunteers built an artificial water development in 1989 near White Pine Peak. This guzzler is now in the Currant Mountain Wilderness and a 2004 inspection indicates the guzzler is only partially functioning because of needed maintenance. Above-average precipitation from 2004 through 2006 has supported in good forage production and increased availability of free water.

Population Status and Trend

The White Pine Range has not been open to sport hunting of desert bighorn sheep. There are 2 distinct small populations of desert bighorn living in Unit 131 - the Currant Mountain population and the Duckwater population. These populations are small and increasing slowly in size with mature rams available for harvest.

Unit 133, 245, Pahranagat and Mount Irish Ranges: Lincoln County
Report by: Mike Scott

Survey Data

A September 2006 survey resulted in an observed total of 56 sheep, including 17 rams, 26 ewes, and 13 lambs. The resulting ratio was 65 rams/100 ewes/ 50 lambs. The previous survey, conducted in September 2004, produced a total of 50 sheep comprised of 11 rams, 24 ewes, and 15 lambs for a ratio of 46 rams/100 ewes/ 63 lambs.

Population Estimate, and Trend

This population has shown a stable to increasing trend for the last few years. The pre-hunt adult population estimate for this area is 90, compared to 80 in 2006.

Unit 134, Pancake Range: Nye County
Report by: Tom Donham

Survey Data

The Department did not conduct a survey was within this report period. In 2005, a total of 205 bighorn sheep was classified including 61 rams, 118 ewes, and 26 lambs. The survey crew flew over Palisade Mesa, Black Beauty Mesa, the Citadel, the area near Twin Springs, Big Fault Ridge, the Lunar Cuestas and the Wall. Despite the absence of formal survey data for 2006, numerous anecdotal accounts provided by hunters participating in the November hunting season infer that production may have increased somewhat over levels experienced by the herd over the past few years. An aerial survey of Unit 134 is scheduled for September 2007.

Population Status and Trend

The Unit 134 desert sheep population is the result of reintroduction effort that took place in 1984. A release of 26 animals occurred in that year, and the herd quickly established itself. The Unit 134 herd has served as a source of transplant stock on three occasions since it became established. Capture operations conducted in 1996, 1998, and 2003 have resulted in the removal of 78 animals for translocation to other mountain ranges of the state.

A short period of population stagnation prevailed at the close of the last century, and then the Unit 134 herd exhibited a steady growth trend until 2003 when poor production affected the recovery, ultimately leading to a numerical decline. The 2005 survey sample yielded a ratio of only 22 lambs/100 ewes observed. While the previously mentioned hunter accounts are cause for encouragement, production still appears to be below the long-term average. Lowered production in recent years is likely due to the combined influences of recent

drought conditions and high sheep densities. The population model for Unit 134 predicts a pre-hunt adult male population of approximately 70, and an overall population estimate of approximately 210 adult animals.

Unit 161, Toquima Range: Northern Nye County
Report by: Tom Donham

Survey Data

Department biologists conducted an aerial composition flight in Unit 161 during late September 2006. A total of 245 sheep was observed in the Mount Jefferson area, including 52 rams, 138 ewes, and 55 lambs. Because of survey constraints, very little time was spent flying the more rugged, precipitous country around the perimeter of Mount Jefferson. Department personnel and sheep hunters recognize that this section of the mountain is favored by mature rams thus the inability to fly there has resulted in a survey sample that does not reflect the true male/female ratio of the herd. Supporting this supposition is the fact that the previous survey, which was conducted in 2004, yielded a sample total of 202 sheep, comprised of 72 rams, 73 ewes, and 22 lambs.

Population Status and Trend

The Unit 161 desert bighorn sheep population in the Toquima Range was established through the release of 22 sheep in 1982 and an additional 4 in 1983. Following these releases, the herd quickly established itself and increased to a level that exceeded original expectations. The herd has since provided transplant stock on three different occasions. A combined total of 77 sheep have been captured and relocated through projects occurring in 2002 and 2003 and most recently in 2006. Animals from Mount Jefferson have been relocated to the Clan Alpine and Tobin Ranges of Churchill and Pershing Counties, respectively, and to the Grant/Quinn Range of Nye County.

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The main herd in Unit 161 occupies Mount Jefferson, within the Alta Toquima Wilderness. Recently a small herd has established itself in the area near Northumberland, north of the main herd. The main herd on Mount Jefferson has experienced lowered production during the past few years likely due to a combination of drought conditions and high sheep densities. The 2006 survey findings infer that a modest increase in production has contributed to an increasing trend for this herd.

The population model for Unit 161 predicts a pre-hunt adult male population of approximately 110, and an overall population estimate of 270 adult animals.

Unit 163, Hot Creek Range: Nye County
Report by: Tom Donham

Survey Data

During an aerial composition flight in early October 2006, biologists classified 77 consisting of 19 rams, 45 ewes, and 13 lambs. This sample was the largest to date for Unit 163. The survey was conducted from Warm Springs on the south end of the Unit to Hot Creek Canyon and covered areas on both the east and west sides of the range. However, Morey Peak was not flown during the 2006 survey due to time constraints and increasing winds. During the previous survey in 2004, a 35 sheep were classified as 7 rams, 24 ewes, and 4 lambs. Although the 2006 observed lamb ratio suggests that production remained below the long-term average, it was nevertheless noticeably better than it has been for the past few years.

Population Status and Trend

The Hot Creek Range desert bighorn sheep population was re-established following releases in 1994 and 1995. The fledgling herd quickly established itself and increased to a moderate level. However, drought conditions beginning in 2001-02 affected production rates and the herd exhibited a decreasing trend. Improved climatic conditions brought relief to the habitat and the herd in 2004 and 2005, and increased production in 2005 stabilized the herd. While still below optimal levels, decent production in 2006 was likely enough to maintain the herd at present levels as well.

Unit 162 was combined with the Unit 163 desert bighorn sheep hunt for the first time in 2005 due to an increasing number of sheep being observed in the southern portion of the Monitor Range. The Unit 162 sheep population is not considered large enough to warrant its own hunt, but potential exists for some limited opportunity in the unit. No harvest has been reported in Unit 162 in since its addition to Unit 163.

The population model for Unit 163 predicts a pre-hunt adult male population of approximately 31 rams and an overall population estimate of 85 adult animals. A population model for Unit 162 has yet to be developed.

Unit 173, Toiyabe Range: Northern Nye County
Report by: Tom Donham

Survey Data

An aerial composition flight of Unit 173 conducted in late September 2006 resulted in the observation of 69 sheep, including 19 rams, 34 ewes, and 16 lambs. The previous survey, conducted from the ground in 2005, led to the classification of 7 rams, 23 ewes, and 15 lambs. Both the 2005 and 2006 surveys took place predominantly on the south end of the unit where the majority of the herd exists.

Population Status and Trend

Due to human impacts, the historically substantial desert sheep population of the Toiyabe Range was reduced to a mere estimated 50 animals by the early 1980's. In 1983 and 1984, a 21 desert sheep originating from southern Nevada were released into the Toiyabe Range in the hopes of stimulating the remnant herd. An additional release of 9 southern Nevada rams from took place in 1993. Due to the success of these initial releases, the desert sheep season was reopened in Unit 173 in 1988. The Unit had been closed to sheep hunting since 1969.

Because of bighorn depredation problems upon private lands in Peavine Canyon, and because of recent increased sheep densities in the area, the Unit 173 bighorn population became identified as a source of transplant stock. During the fall of 2005, NDOW captured a total of 12 sheep in the Seyler Peak area of Unit 173. This complement, combined with sheep captured from the Monte Cristo Range and the Gabbs Valley Range, were subsequently translocated to the Grant/Quinn Range of eastern Nye County

The largest segment of the Toiyabe desert sheep population occurs on the south end of the Unit in the Seyler Peak, Peavine Canyon area. For the past several years, the previously mentioned depredation issues in Peavine Canyon have been increasing. This occurrence is due not only to increased sheep numbers but also to drought conditions which influence sheep to seek water and better quality forage within pastures and fields. Due to improved range conditions in 2004 and 2005, sheep use on private land eased somewhat during the past two years. Desert sheep do occur throughout much of the Toiyabe Range, but densities are significantly lower north of Seyler Peak, and groups of animals are much smaller and more dispersed. Sheep also occur as far north as Bunker Hill north of Kingston Canyon, but growth of this portion of the herd will not be actively managed until domestic sheep use of that area is discontinued and the risks of a transpacific disease transmission disappears.

The Unit 173 herd is currently considered stable. The population model predicts a pre-hunt adult male population of approximately 65 and an overall population estimate of approximately 160 adult animals.

Unit 181, Fairview Peak, Slate Mountain, and Sand Springs Range: Churchill County
Report by: Jason Salisbury

Survey Data

An October 2006 aerial survey of Unit 181 resulted in the classification of 203 sheep. This was a record survey total for this unit, 120 more sheep than what was observed during 2004 fall flights. The composition ratio for the survey was 71 rams/100 ewes/52 lambs. It is noteworthy to mention that lamb ratios in the

adjoining units of Areas 18 and 20 are collectively higher (55) than the statewide average of 44 lambs per 100 ewes.

Habitat

In March 2007 the Department, working with sportsman's organizations and the United States Navy, constructed two pipe rail fences around two different spring sources located in the Sand Springs Range. Each fence measured approximately 450 feet in length. Additionally, each site contained tanks and drinkers located inside the fence perimeter to draw water off of the spring sources. One site has the ability to store 2,450 gallons of water and the other site can store 3,800 gallons of water. Within two days of completion, both tanks were full of water and the drinkers were overflowing. The pipe rail fences will protect riparian vegetation from overuse by domestic and feral ungulates. The projects, which are protected through acquired water rights, will provide yearlong water for all wildlife inhabiting this mountain range.

Population Status and Trend

Factoring in the observed lamb production and by extension recruitment into the adult population, the Unit 181 desert bighorn sheep population is presently estimated at 230 animals. Because the bighorn population in western-central Nevada, and specifically within this unit, continues to display dynamic growth tendencies, additional water developments are needed to dissuade congestion upon the few natural springs that sheep use during the summer months. Considerable movement has been documented to occur between Units 181, 183 and 184. The conspicuous increase of the Unit 181 sample totals between the last two survey attempts cannot be entirely attributable to good lamb recruitment alone. Immigration from the adjacent mountain ranges, whether seasonal or permanent, has likely contributed to the numerical and distributional growth of this population. Only the paucity of water sources seems to emerge as a factor that limits dispersal and increased densities.

Because of the population vigor eminent in this unit, in October 2007 the first capture and translocation of bighorn sheep took place in the Sand Springs Range with the removal of 21 bighorn sheep for augmentation of a herd located in Utah. The 21 sheep were comprised of 18 ewes, 2 male lambs and one male aged at 1.5 years.

Unit 183, Clan Alpine Range: Churchill County

Report by: Jason Salisbury

Survey Data

Biologists observed 166 bighorn sheep during an aerial composition survey of the Clan Alpine Range in October 2007, yielding a computed ratio of 53 rams/100 ewes/55 lambs.

Habitat

The Department has planned to conduct maintenance on the Little Angel water development in the summer of 2007. The planned repairs and upgraded 1,200 gallons of additional storage capacity will provide consistent water for bighorns, even in very dry years.

The Cow Canyon area of Unit 183 has recovered well in the upper elevations following the Twin Peaks Fire. Bighorn have keyed in on the new grasses and browse flourishing in the higher elevations of the burn. There are an estimated 70 bighorn sheep that utilize the Cow Canyon area year round.

Population Status and Trend

The desert bighorn sheep population estimate for the Clan Alpine Range is now at 220 animals, a 16% growth rate compared to the previous year. Production rates observed over the last three years suggest above maintenance-level recruitment is prevailing, thus fostering a vigorous growth trend.

Unit 184, Desatoya Range: Churchill and Lander Counties
Report by: Jason Salisbury

Survey Data

In October 2007 biologists conducted an aerial composition survey of the Desatoya Range. A total of 97 bighorn sheep were classified generating a ratio of 48 rams/ 100ewes/ 63 lambs. Areas surveyed included the Desatoya Mountains, the Eastgate Hills and the Greyback and Broken Hills.

Habitat

In May 2007 a large capacity water development will be constructed in the Broken Hills in the southwestern portion of Unit 184. New water in the southern end of Unit 184 and should provide support to existing sheep numbers and will likely sustain sheep movement between the Greyback Hills, the Broken Hills, and the Monte Cristo Range.

Population Status and Trend

This year's observed lamb production is high as evidenced by the observed lamb ratio. Given good survival of this cohort into the next breeding season, the resultant recruitment should allow for population expansion and growth. The highest observed lamb ratio for Unit 184 (68 lambs/100 ewes) occurred in 2004 and observed lamb ratios have averaged between 40 and 63 lambs/100 ewes since 1998. The 5-year average for lamb ratios has been 52 lambs/100 ewes. The 2007 desert bighorn sheep population estimate for the Unit 184 herd is 190 animals a 10 animal increase compared to last year's estimate.

Unit 202, Wassuk Range of Mineral County
Report by: Jason Salisbury

Survey Data

In October 2007 biologists spent 2 hours in the helicopter to classify 30 bighorns in the Wassuk Range. The sample consisted of 9 rams, 14 ewes and 7 lambs. Though not a particularly impressive total on its own, the 2007 sample is a record for Unit 202, where traditional survey efforts have generally been unsuccessful in the heavily forested and coarse terrain.

Population Status and Trend

Because of the inability to obtain any consistent composition data, a credible trend assessment is difficult to contrive. Generally speaking, biologists believe the population in the Wassuk Range is static at a very low density. Though suitable habitat is dispersed throughout the expansive mountain range, almost nothing is known about bighorn distribution and numbers north and south of what is accepted as the 'core area' for this population – the eastern face of Mount Grant. Biologists believe that a change of livestock class in the north half of the range along with some water developments should set the stage for additional releases to create a dynamic population here.

Unit 204, Pine Grove Range: Lyon County
Report by: Jason Salisbury

Survey Data

Aerial surveys conducted in October 2007 resulted in the classification of 43 bighorn sheep consisting of 7 rams, 23 ewes and 13 lambs.

Habitat

The total amount of area sheep can occupy in the East Walker River drainage is limited. The strategic placement of a guzzler within the upper elevation tables on the east side of the Pine Grove Hills might be helpful in drawing bighorns away from the river into more open terrain.

Population Estimates and Trend

The Unit 204 desert bighorn sheep population was established through the initial release of 21 sheep in 1993. A second augmentation of 21 sheep occurred in 1995. In 1996 bighorn sheep were observed in the Wilson Canyon area off State Route 208. Since this time six known bighorn mortalities occurred along State Route 208. These data suggest that bighorns sought habitat away from the East Walker River Canyon. A third augmentation of 22 sheep occurred in 2001. However, since 2001 bighorns have not been observed along State Route 208 in the Wilson Canyon Area. Prior to the initial release, biologists had concerns that mountain lion predation could hinder or even prohibit the reestablishment of bighorns here. Subsequent to these releases, even to the present day, NDOW has received a cooperative hand from USDA Wildlife Services, whose personnel have removed a number of lions from the area.

The 2007 population estimate for the Pine Grove herd is 50 animals. Currently, production is allowing the herd to experience a stable to increasing trend. Sheep numbers and the availability of mature rams in this population have reached a point where a limited hunt can be allowed without adversely affecting the population.

Unit 205, Gabbs Valley Range, Gillis Range, Pilot Mountains: Eastern Mineral County

Report by: Jason Salisbury

Hunt Unit Changes

In 2007, at the request of Mineral County Wildlife Advisory Board, the Nevada Board of Wildlife Commissioners adopted regulations to split hunt Unit 205 into north and south segments, or hunt areas, each with its own hunter choice number. These areas are described as Unit 205 N and Unit 205 S and State Route 361 divides the two. This changes was made in an attempt to force more evenly distributed hunting pressure.

Survey Data

In October 2007, a 5-hour aerial survey of Unit 205 yielded a sample of 254 bighorn sheep. The sample was the largest recorded and provided a composition ratio of 67 rams/100 ewes/52 lambs. The areas surveyed included the Gabbs Valley Range, Pilot Mountain and the Gillis Range.

Habitat

In August 2006 a large capacity water development was constructed near Calvada Summit on the Homestake Mine reclamation area. This large capacity water development provides an alternative source of water for bighorn sheep in and around the reclaimed mine property. Starting in the summer of 2007, maintenance will be conducted on several existing large capacity water developments in Unit 205. This work will include the replacement of existing gutters with a new style of gutter that will enhance the amount of water collected over the course of the year. Other work will be completed to improve the functionality of these older projects.

Population Status and Trend

The 2007 desert bighorn sheep population estimate is 350 animals and represents an increase from last year's estimate of 310 animals. Based on survey data this population has increased slightly and will continue to grow as long as lamb ratios consistently stay in the 50s for the last three years. Older age class rams are well represented within the population and will continue to provide hunters with a quality hunt

Unit 206, Excelsior Range: Mineral County
Report by: Jason Salisbury

Survey Data

Aerial surveys conducted in October 2007 resulted in the classification of 46 bighorn sheep. The composition ratio consisted of 30 rams/100 ewes/70 lambs. The Excelsior Mountain Range was the only area surveyed in Unit 206.

Habitat

The water development located in the Excelsior Range is not functioning properly. It is scheduled for replacement sometime in the near future. Water development potential exists in the surrounding mountain ranges including the Candelaria Hills, Miller Mountain, Scott's Mountain and the western portion of the Excelsior Mountains.

Population Estimates and Trend

The Excelsior bighorn herd began to show a downward trend in 1999 when lamb production and recruitment rates dropped into the high teens. These low production rates lasted through 2002 probably leading to below-maintenance recruitment levels over several consecutive years. Poor representation of those cohorts means that older age rams are presently scarce or even nonexistent. The fall 2007population estimate for Excelsior Range is 70 animals and approximates what was reported last year. The bighorn population in the Excelsior Mountains is stable at a low density, but lamb observations in 2006 and 2004 (60 lambs/100 ewes) suggests that some recruitment may be occurring to contribute toward a population recovery.

Unit 211 N: Monte Cristo Range: Esmeralda County
Report by: Tom Donham

A Note on Area 21 Hunt Units

In 2005, Unit 211 was spilt into two distinct herd Units, Units 211N and 211S. Unit 211N is that portion of Hunt Unit 211 north of U.S. Hwy 95 and is comprised of the Monte Cristo Mountain Range. Unit 211S is that portion of Hunt Unit 211 south of U.S. Hwy 95 and is comprised primarily of the Silver Peak Range and Volcanic Hills.

Survey Data

An aerial composition flight was conducted during late September 2006 in the Monte Cristo Range. Biologists observed a total of 216 desert sheep, comprised of 52 rams, 100 ewes, and 64 lambs. The 2006 sample was the highest observed since 1998, and was the second highest sample on record for the Monte Cristo Range. The survey was very thorough covering nearly all known occupied habitat. Production was high in 2006 consistent with findings over the past several years. The previous aerial survey in 2004 found a total of 112 sheep classified including 30 rams, 48 ewes, and 34 lambs.

Habitat

During the spring of 2005, a new water development was constructed in the Monte Cristo Range in order to augment natural water sources on the south end of the range that have been impacted by drought conditions. Sheep were observed near the development during the 2006 survey

Population Status and Trend

Historically, the Monte Cristo Range was thought to have served primarily as winter range for the Silver Peak and Lone Mountain desert sheep populations. Survey data and random observations indicated that sheep movement regularly took place between the three ranges. More recently, there is no evidence to suggest

that this interchange continues and it is accepted that the three ranges support separate and distinct populations of desert bighorns. Production has been very good in the Monte Cristo Range over the past several years, and the population is showing an increasing trend.

The population model for Unit 211N predicts a pre-hunt adult male population of approximately 88 rams and an overall population estimate of 208 adult animals.

Unit 211 S: Silver Peak Range and Volcanic Hills: Esmeralda County

Report by: Tom Donham

Survey Data

No survey was conducted in Unit 211S in 2006. The most recent aerial survey was conducted in 2004 when a total of 50 desert sheep was classified as 17 rams, 19 ewes and 14 lambs. The 2004 survey took place in the Volcanic Hills and the Silver Peak Range from The Gap to Ice House Canyon. Unit 211S is scheduled to be surveyed again during the fall of 2007.

Habitat

During the spring of 2004, two existing wildlife water developments in the Silver Peak Range were completely rebuilt. A third water development is scheduled for a rebuild in the near future.

Population Status and Trend

As noted in the Unit 211N report, Unit 211S supports an individual population inhabiting the Silver Peak Range and the Volcanic Hills. Numbers of animals using the Volcanic Hills portion of the Unit have increased due to the installation of two water developments several years ago, and movement between the two ranges occurs on a regular basis. Production has been good for the Unit 211S sheep population over the past few years and the herd appears to be stable to slightly increasing.

The population model for Unit 211S predicts a pre-hunt adult male population of approximately 37 rams and an overall population estimate of 90 adult animals.

Unit 212, Lone Mountain: Esmeralda County

Report by: Tom Donham

Survey Data

No survey was conducted during 2006 in Unit 212. The most recent aerial composition flight occurred in late August of 2005 when a total of 78 sheep was classified. The sample included 25 rams, 41 ewes and 12 lambs. The 2005 observed lamb ratio indicated that production fell noticeably from levels experienced for several years previously. The 2005 survey covered the lower half of Lone Mountain, the Weepah Hills and Paymaster Canyon. Time was not available to thoroughly cover the upper elevations of Lone Mountain, which is covered with dense piñon and juniper woodland. Unit 212 is scheduled for survey during the fall of 2007.

Population Status and Trend

While many other desert sheep herds in central Nevada were entirely wiped out due to human impacts during the late 1800's and early 1900's, a small portion of the desert sheep population that inhabits Lone Mountain survived. The rugged and nearly inaccessible nature of much of Lone Mountain served to protect the remnant herd from unregulated hunting and mining impacts, thus this isolated herd avoided complete extermination. During Prohibition (1920-1933), the Lone Mountain herd had to survive a different type of threat. It is well known that all of the accessible and available water sources on Lone Mountain were used for making whiskey during this period, thus bighorns were either displaced from, or at the least vulnerable to poaching at these waters. Having struggled through these setbacks, the Unit 212 population increased

dramatically once regulations were put into place protecting them and their habitats, and by the 1980's the herd was estimated at over 200 animals. During the later half of the 1980's, the herd served as a source of transplant stock on two occasions. A total of 58 sheep was removed during the two projects. Following the 1988 capture, the Lone Mountain population experienced a sharp decline, and by 1991 the herd was estimated to total approximately 50 animals. Following several years of remaining static at lowered levels, the herd began to experience a slow, but steady recovery due to increased production and survival of adult animals. Production dropped in 2005, and the herd has once again become stable.

The population model for Unit 212 predicts a pre-hunt adult male population of approximately 50 and an overall population of 140 adult animals.

Unit 221, South Egan Range: Lincoln County
Report by: Mike Scott

Survey Data

No formal surveys were conducted during the reporting period. A total of 18 sheep were observed during fall mule deer surveys consisting of 3 rams, 13 ewes, and 2 lambs.

Population Status and Trend

The current population estimate is 50 animals, down from the 2006 estimate.

Unit 223, 241, Hiko, Pahroc, and Delamar Ranges: Lincoln County
Report by: Mike Scott

Survey Data

Aerial surveys of the Delamar and Hiko Ranges occurred in Sept 2006 and resulted in the classification of 53 sheep. This total included 20 rams, 26 ewes and 7 lambs for a ratio of 77 rams/100 ewes/27 lambs. Only 14 of the 53 sheep observed were found in the Delamar Range.

Habitat

Approximately 25,000 acres of the South Pahroc Range burned in the summer of 2006. If this area was rehabilitated properly, it would likely benefit desert sheep in the future. The BLM is proposing to allow an off-road rock crawling course in the Hell's Half Acre area in the South Hiko Range. In past years this area was heavily used by desert sheep, however, the increased off-road use has and will likely continue to reduce use of the area by desert bighorn sheep.

Population Status and Trend

A domestic sheep was removed from the North Hiko Range in the fall of 2004. Since that time, the observed numbers of desert bighorn sheep in the area have plummeted. The population estimate is 100 animals, compared to 170 in 2005.

Unit 243, Meadow Valley Mountains: Lincoln County
Report by: Mike Scott

Survey Data

No formal surveys were conducted during the reporting period. A September 2005 survey resulted in the classification of 58 bighorns, consisting of 16 rams, 31 ewes, and 11 lambs.

Habitat and Population Status and Trend

Tagholders choosing to hunt the Meadow Valley Mountains will find accessing the mountain a challenge. Union Pacific has closed the road in Meadow Valley Wash on the east side of the range, Coyote Springs Investments has closed Old Highway 93 along the west side of the range, and the declaration of wilderness resulted in nearly all of the other access roads into the range to be closed. These road closures will likely affect sheep harvest into the future.

The population estimate is 70 animals, similar to the 2006 estimate.

Unit 244, Arrow Canyon Range: Northern Clark County

Report by: Patrick Cummings

Survey Data

In October 2006, a 5.7-hour aerial survey conducted in the Arrow Canyon Range yielded a sample of 63 bighorn sheep. The observed sex and age ratios were 63 rams and 17 lambs per 100 ewes. The noted lamb-to-ewe ratio was among the lowest on record. Bighorn sheep were encountered throughout much of the interior of the Arrow Canyon Range; alternatively, few sheep were observed on northern and southern extensions of the range. The adjacent Battleship Hills were not included in the aerial survey.

Habitat

Bighorn sheep inhabiting the Arrow Canyon Range and Meadow Valley Mountains will likely be impacted by impending construction and other influences emanating from the Coyote Springs master planned community. The 42,000-acre parcel is situated northeast of the junction of U.S. 93 and State Route 168, and is the largest privately held property for development in Southern Nevada. Construction of the master planned community commenced in 2005.

In the southeast portion of the Arrow Canyon Range, Ash Grove Cement Company plans to construct a limestone quarry that will entail the extraction of immense quantities of minerals. The project will also have an extensive footprint upon the land particularly in two sections that receive year-round use by bighorn sheep. Section 6 also encompasses the mouth of the largest canyon complex in the Arrow Canyon Range. The west boundary of the quarry is uncomfortably close to the Arrow Canyon #1 and Arrow Canyon #2 water developments.

In January 2003, vandals extensively damaged Arrow Canyon #2 rendering it essentially nonfunctional. In February 2004, a new water development (rebuild of Arrow Canyon #2) was constructed 2.8 miles north of Arrow Canyon #1. A gated fence was constructed on the access road to Arrow Canyon #1 to minimize the potential for vandalization.

Population Status and Trend

Severe drought conditions from 2000 through 2002 impacted the bighorn sheep population inhabiting the Arrow Canyon Range. Successive years of drought resulted in lowered recruitment and reduced survivorship. In recent years however, the herd expanded due to improved environmental conditions brought about by above average precipitation receipts in 2003 and 2004. Most recently, comparatively dry conditions have prevailed since the end of 2005 through March 2007.

Recently constructed water catchments in the adjacent Meadow Valley Range may result in increased use of a historic movement corridor between the mountain ranges across present day SR 168.

The 2007 desert bighorn sheep population estimate is 100 adults, and approximates the estimate derived last year. The 2006 population estimate reflected reconsideration and refinement of survivorship values in the population model rather than a population decline. It was reasoned the bighorn sheep population in the Arrow Canyon Range was over estimated each year beginning in the early to mid 1990s.

Unit 252, Stonewall Mountain: Nye County
Report by: Tom Donham

Survey Data

Biologists conducted an aerial composition flight in Unit 252 in late September 2006. A total of 175 desert sheep was classified on and around Stonewall Mountain, comprised of 37 rams, 103 ewes and 35 lambs. The 2006 sample is the highest on record. The 2006 survey was limited to Stonewall proper and Pahute Mesa south to Yellow Gold Mine.

Population Status and Trend

The Unit 252 desert sheep population is another success story for Nevada's big game trapping and transplanting program. The population was re-established through three transplant efforts conducted in 1975, 1978, and 1983. Following the establishment of the herd in the Stonewall Mountain area, the herd increased steadily until 1996. During 1996, the population experienced a major decline in the Stonewall Mountain area. The decline appeared to have been due to a major movement of sheep out of the area, as opposed to a disease related die-off. The herd has exhibited a steady increase in the area since, and the trend continues. The herd has reached a level nearly identical to where it was prior to the 1996 decline. It remains to be seen whether density-dependent factors will induce a similar exodus.

It is difficult to monitor the Unit 252 bighorn population. As long as these animals continue regularly move in between the Stonewall Mountain and inaccessible areas of the Tonopah Test Range, literally on a day-to-day basis, biologists' survey findings will continue to be considered a seasonal "snapshot" of the desert sheep population in the area.

Presently, the population model for Unit 252 predicts a pre-hunt adult male population of approximately 64, and an overall population estimate of 180 adult animals.

Unit 253, Bare Mountain and Specter Range: Southern Nye County
Report by: Patrick Cummings

Seasons and Hunt Quotas

In 2005 and 2006, separate quotas were allotted to Bare Mountain and Specter Range. The objectives in splitting Unit 253 were to disperse harvest pressure and potentially increase hunter opportunity. Prior to separate quotas, five tags were apportioned in 2004. In 2005 and 2006, Bare Mountain and the Specter Range were allotted three and four tags, respectively.

In 2005 and 2006 seasons, interest was high among recipients of Wildlife Heritage Tags and Partnership in Wildlife Tags to hunt rams on Bare Mountain. Thus, the total ram harvest on Bare Mountain in 2005 was five followed by six in 2006.

Survey Data

The last aerial bighorn sheep survey conducted on Bare Mountain was in October 2004. The 2.9-hour survey yielded a sample of 80 bighorn sheep. The sample was the largest recorded and reflected sex and age ratios of 48 rams and 53 lambs per 100 ewes. The next aerial bighorn sheep survey on Bare Mountain is scheduled for fall 2007.

In the Specter Range, a 4.2-hour aerial survey was conducted in October 2006, and yielded a sample of 67 bighorn sheep. The observed sex and age ratios were 53 rams and 15 lambs per 100 ewes. Bighorn sheep were found widely distributed throughout much of the range.

Habitat

Overall dry conditions in 2006 and early 2007 resulted in inadequate recharge of many water developments

in the Specter Range and on Bare Mountain. In early March 2007, water development inspections revealed that six projects in the Specter Range were collectively charged to 57% of capacity. On Bare Mountain, available water stores among three projects equated to 19% of collective capacity. Presently, plans to haul water in April or early May 2007 are under consideration.

Population Status and Trend

The Bare Mountain bighorn sheep population appears stable, and is estimated at approximately 100 adults. In the Specter Range however, events beginning at least as early as Fall 2002 suggest the population has been impacted by disease. Available evidence suggests bacterial pneumonia may be a factor in high mortality among lambs. Recruitment in three consecutive years (2003-05) was negligible.

More recently, the increased lamb-to-ewe ratios observed during fall aerial surveys in 2005 (21 lambs/100 ewes) and 2006 (15 lambs/100 ewes) might signal improved survivorship. However, recruitment in 2007 will not be sufficient to offset overall mortality in the population.

The Specter Range bighorn sheep population remains on a downward trend. Due to successive years of poor recruitment, age cohorts from one through five are thinly represented in the population. In the near future, hunt quotas will need to be adjusted to account for underrepresented age cohorts. The population estimate for the Specter Range herd is 70 - 80.

Unit 261, Last Chance Range: Southeastern Nye County

Report by: Patrick Cummings

Survey Data

In October 2006, a 5.9-hour aerial survey conducted in the Last Chance Range yielded a sample of 133 bighorn sheep. The observed sex and age ratios were 58 rams and 22 lambs per 100 ewes. To date, the aerial survey was the most extensive in duration and coverage, and resulted in the largest recorded sample. Bighorn sheep were encountered on all the major ridges and mountains that comprise the Last Chance Range.

Habitat

Overall dry conditions in 2006 and early 2007 resulted in inadequate recharge of several water developments in the Last Chance Range. In early March 2007, water development inspections revealed seven projects were collectively charged to 45%. Presently, plans to haul water in April or early May 2007 are under consideration.

In 2003, bighorn sheep habitat improvements entailed construction of a seventh water development, and upgrade of an existing unit. The new water development is situated on the prominent ridge north of Pahrump. On the north end of the range, the upgrade of a unit involved added water storage capacity and installation of a steel apron.

A consequence of the expanding human population in the Pahrump Valley is habitat degradation resulting from dispersed recreational use of off-highway-vehicles (OHV), and in the recent past, permitted OHV races.

Population Status and Trend

The 2007 bighorn sheep population estimate is 130-140, and reflects an increase relative to the estimate (120) reported last year. The apparent recent population expansion is likely due to favorable environmental conditions beginning early 2003 and extending into late 2005.

Unit 262, Spring Mountains (La Madre, Red Rock and South Spring Mountains) and Bird Spring Range: Western Clark County

Report by: Patrick Cummings

Survey Data

In October 2006, an aerial survey conducted in the La Madre Ridge and Red Rock Escarpment areas yielded a sample of 104 bighorn sheep. The observed sex and age ratios were 55 rams and 42 lambs per 100 ewes. The survey effort resulted in the largest recorded sample despite conditions of reduced observability due to reattachment of aircraft doors prior to survey in the Red Rock Escarpment. Bighorn sheep were well distributed along the prominent south ridge that defines Box Canyon. In this area, 12 groups comprised of 77 sheep were encountered within 1.7 square miles.

In the south Spring Mountains (south of State Route 160), a 4.8-hour aerial survey conducted in September 2005, yielded a sample of 5 rams, 7 ewes and 4 lambs.

Habitat

Unit 262 tends to receive more precipitation from year to year than most other areas in Clark County. Bighorn sheep generally benefit from adequate range conditions on a consistent basis; however, due to proximity to Las Vegas, recreational pursuits (e.g., OHV and mountain bike use/proliferation of roads and trails), feral horses and burros, and suburban sprawl serve to degrade habitat.

On June 22, 2005, lightning strikes in the higher elevations near Potosi Peak ignited the Goodsprings Fire. The heavy accumulation of fine fuels coupled with high winds allowed the fire to spread along ridgelines and ultimately consume 33,484 acres. The Goodsprings Fire consumed plants within three vegetative associations: Creosote-Bursage Flats, Mojave Desert Scrub, and Pinyon-Juniper Woodland along a 3,940'-elevation gradient. Landmark areas within the Goodsprings Fire included: northern portion of the Bird Springs Range; eastern portion of Cottonwood Valley, northern portion of Goodsprings Valley, eastern and southern Potosi Mountain and Shenandoah Peak. Severely and extensively burned areas with little to no remaining vegetation included: northern portion of Goodsprings Valley, Double Up Mine canyon, Cave Spring canyon and Shenandoah Peak. Areas burned that contained few small mosaics of remaining vegetation included: northern portion of the Bird Spring Range, Ninety-nine Spring canyon, and areas southwest, south and east of Shenandoah Peak. In addition, vegetation associated with approximately 3 springs and numerous wash complexes were impacted by fire.

Population Status and Trend

North of State Route 160, bighorn sheep inhabit the Red Rock and La Madre portions of the Spring Mountains. South of State Route 160, bighorn occur in lower densities throughout the Bird Spring Range, Potosi Mountain, Table Mountain, Little Devil Peak and Devil Peak.

In 2007, the desert bighorn sheep population estimate is 180 and approximates the estimate reported last year.

Desert bighorn sheep in the Spring Mountains face a host of challenges with respect to habitat degradation, fragmentation and loss. In the La Madre Ridge area, human encroachment in the form of suburban sprawl and OHV use has eliminated and degraded bighorn sheep habitat. Increasingly, land management emphasis in the Red Rock area is to accommodate human recreational pursuits that are often incompatible with habitat and wildlife conservation. Future large-scale projects include upgrade of Sandy Valley Road and the probable development of a wind energy power generation plant in the Table Mountain area.

In the late 1990s, the Las Vegas District Bureau of Land Management (BLM) administratively designated a large area (approximately 3,641 acres) east of La Madre Ridge as Lone Mountain Community Pit (LMCP). The intent of the designation was to accommodate local demand for an additional source of sand and gravel to support development in Southern Nevada. However, the BLM designated LMCP without adequate evaluation of environmental impacts or review of existing documents. In the 1960s, BLM identified much of

the area now within the boundary of LMCP as seasonally important for bighorn sheep. Presently, after over three years of coordination between NDOW and BLM, BLM is considering the need to conduct an environmental assessment to evaluate continued sale of mineral materials in important bighorn sheep habitat.

Unit 263, McCullough Range and Highland Range: Southern Clark County

Report by: Patrick Cummings

Hunt Quotas and Harvest

In 2005, the overall quota was raised from 6 in the previous year to 10. Similar to recent hunt seasons, interest to hunt in Unit 263 remains high among recipients of Wildlife Heritage Tags and Partnership in Wildlife Tags. Thus, in 2006, 12 rams were harvested in the unit.

Survey Data

In September 2006, aerial bighorn sheep surveys were conducted in the Highland Range and McCullough Range. In the Highland Range, a 4.2-hour survey yielded a sample of 33 sheep. The observed sex and age ratios were 93 rams and 43 lambs per 100 ewes. In the northern portion of the McCullough Range, a 6.7-hour survey yielded a sample of 319 sheep. The sample revealed age and sex ratios of 44 rams and 50 lambs per 100 ewes. No bighorn sheep were observed during a 1.1-hour aerial survey that was conducted south of McCullough Pass.

Habitat

In January 2004, Fraternity of the Desert Bighorn members and NDOW personnel reconstructed the Highland #2 water development. In like fashion, the Highland #1 water development was reconstructed in February 2003. Steel collection aprons were installed at both units. Water storage capacities at Highland #1 and Highland #2 are 7,200 gallons and 3,600 gallons, respectively.

Further north, in mid March 2004, the McCullough #1 water development was upgraded with 2,700 gallons of additional water storage capacity, and construction of a steel collection apron and small dam. The total water storage capacity of the unit is now 10,100 gallons.

Three land use actions already authorized by federal legislation or by Las Vegas District Bureau of Land Management are anticipated to impact bighorn sheep inhabiting the northern portion of the McCullough Range. To enhance recreation, the city of Henderson has advocated construction of a road and associated trails network that would extend from Anthem master-planned community eastward over the McCullough Range and link with that portion of Henderson on the east side of the range. Two other projects focused in McCullough Pass involve construction of a 20-inch diameter, buried steel natural gas pipeline, and an additional set of high-tension power lines. The Harry Allen-Mead Transmission Line Project was completed recently, and entailed construction of a 500-kilovolt-transmission line through the south end of the prominent ridge that extends south from Railroad Pass.

An unresolved issue centers on relocation of a segment of the local helicopter scenic tour operations from McCarran International Airport. The widely supported project is intended to direct helicopters enroute to and from the Grand Canyon to an unpopulated area. One proposal identifies a heliport south of Sloan. Under this scenario, tour helicopters departing and arriving at a heliport south of Sloan would necessarily fly over the McCullough Range. The direct routes to and from the proposed heliport would entail potentially 120-200+ low-level flights over the central portion of the McCullough Range within 1 mile of 2 water developments. The issue and details will be resolved through federal legislation.

Population Status and Trend

The desert bighorn sheep herd inhabiting the Highland Range and McCullough Range is projected to expand in 2007. Based on population model projection, the bighorn herd will number approximately 350 adults

midway through the year. Based on aerial survey data, the majority of the bighorn sheep in Unit 263 remain distributed north of McCullough Pass.

In October 2006, the second capture and removal of bighorn sheep in the McCullough Range was conducted to achieve an augmentation of the herd inhabiting the Virgin Mountains. Twenty-seven sheep comprised of 22 ewes, 2 female lambs and 3 male lambs were captured from the northeast and central portions of the range.

In October 2003, the first capture and removal of bighorn sheep in the McCullough Range was conducted to achieve an augmentation of the herd inhabiting the Delamar Range. Fifteen sheep comprised of 14 ewes and 1 male lamb were captured from the east-central portion of the range.

In an isolated incident in late July 2005, 22 bighorn sheep were found to have died in proximity to the Roy water development. An extensive investigation ensued into what caused the deaths of 11 rams, 6 ewes and 5 lambs. Dr. Dan Crowell, a veterinarian with Nevada Department of Agriculture, coordinated the investigation. Bighorn sheep tissue and water samples were submitted to California Animal Health and Food Safety Laboratories at University of California, Davis. The considered possible causes of death included: lightning, dehydration, toxic compounds and metals and disease. Diagnostic findings were inconclusive as to the cause of death of the 22 bighorn sheep. Lightning was reasoned as not a causative factor. A confounding aspect that limited the scope of testing was extreme high temperatures prior to and during the narrow timeframe within which the bighorn sheep died. The record high temperatures in late July served to hasten decomposition. The rapid decomposition of the carcasses limited the number and types of tissue samples collected. All tissue samples were autolyzed and unsuitable for bacteriology tests.

Additional critical factors that likely hampered detection of a toxin in the drinker were the dismantled float valve at the drinker and heavy rainfall that occurred the night before and early morning of the day the sheep were discovered. The inoperable float valve resulted in an open, flow-through system that when it rained the drinker was thoroughly flushed. Thus, if a toxin were present in the drinker it likely would have been eliminated through prolonged flushing action shortly after rainfall began the night prior to discovery.

Bighorn sheep in the northern portion of the McCullough Range face a variety of human imposed challenges in the near future. On the west flank of the range, suburban sprawl and flood control measures have already claimed much of the lower elevation habitat. To the north, the movement corridor between the River Mountains and the McCullough Range across US 93/95 at Railroad Pass has been effectively eliminated. Additional urban sprawl southward along I-15 is expected to degrade bighorn sheep habitat in the Hidden Valley area.

Unit 264, Newberry Mountains: Southern Clark County

Report by: Patrick Cummings

Survey Data

In October 2006, a 4.8-hour aerial survey conducted in the Newberry Mountains yielded the highest recorded sample of 45 bighorn sheep. The sample was comprised of 22 rams, 19 ewes and 4 lambs. Bighorn sheep were thinly distributed in the northern half of the range, yet encountered throughout much of the eastern portion of the range. The aerial survey did not extend to the southern half of the Newberry Mountains.

Table 1. Bighorn composition obtained through aerial surveys in the Newberry Mountains.

Year	Rams	Ewes	Lambs	Total	Rams/100 Ewes/Lambs
1994	3	6	0	9	50/100/0
1996	6	11	4	21	55/100/36
1998	7	13	11	31	54/100/85
2000	12	18	5	35	67/100/28
2003	11	16	14	41	69/100/88
2006	22	19	4	45	116/100/21

Population Status and Trend

The desert bighorn sheep population in the Newberry Mountains is estimated at 50-60, and approximates the estimate derived last year. Population data over the long term suggest the small herd is stable.

Unit 265, South Eldorado Mountains: Southeastern Clark County

Report by: Patrick Cummings

Seasons and Hunt Quotas

Units 264 and 265 have constituted a hunt unit group since 1998.

Survey Data

No aerial survey was conducted in 2006. In October 2005, an aerial survey conducted in Unit 265 was prematurely terminated after 1.3 hours due to an aircraft maintenance concern. A single ram was observed during the abbreviated flight. In October 2003, 2 rams, 6 ewes and 4 lambs were observed during a 4.5-hour survey (Table 1). The next aerial bighorn sheep survey in the south Eldorado Mountains is scheduled for fall 2007.

Table 1. Bighorn composition obtained through aerial surveys in the south Eldorado Mountains.

Year	Rams	Ewes	Lambs	Total	Rams/100 Ewes/Lambs
1992	3	1	0	4	300/100/0
1994	1	5	3	9	20/100/60
1996	19	14	5	38	136/100/36
1998	14	3	1	18	467/100/33
2002	3	2	2	7	150/100/100
2003	2	6	4	12	33/100/67

Since 1969, survey sample sizes have varied widely; samples have ranged from 0 to 50 animals. In some years, aerial survey data portray a disproportionate number of rams in the unit. In many of the 20 aerial surveys conducted since 1969, the number of rams observed either equaled or far exceeded the number of ewes.

Population Status and Trend

The southern Eldorado Mountains support a low-density resident bighorn herd as well as a fall migrant segment from the northern portion of the range. The 2007 desert bighorn sheep population estimate for the herd inhabiting the entire Eldorado Mountains (Units 265 and 266) is 190, and approximates the estimate reported last year.

Unit 266, North Eldorado Mountains: Southeastern Clark County

Report by: Patrick Cummings

Survey Data

In October 2006, a 5.8-hour aerial survey conducted in the northern portion of the Eldorado Mountains yielded a sample of 127 bighorn sheep. The observed sex and age ratios were 57 rams and 33 lambs per 100 ewes. Bighorn sheep were well distributed along the prominent east-west oriented ridge situated northeast of Boulder City and south of US 93, and were encountered in near regular intervals as the survey progressed south to Burro Wash.

Habitat

On the northern end of the Eldorado Mountains, the herd has coped not only with persistent drought conditions (2000-02), but also periodic deaths consequential to collisions with vehicles along US 93. The highway traverses through a bighorn sheep core use area and likely represents a population sink. The

magnitude of the problem is somewhat unclear as it is expected only a fraction of bighorn-vehicle collisions are reported.

The bighorn sheep herd in the Eldorado Mountains will face additional human imposed challenges. Two massive projects, one of which is underway, are intended to divert highway traffic from traveling along existing US 93 over Hoover Dam and through Boulder City. The Hoover Dam Bypass is nearing completion, and entails construction of a bridge that will span the Colorado River as well as a new U.S. 93 alignment. The second bypass project will extend the new US 93 alignment east of Boulder City through the northern portion and western flank of the Eldorado Mountains.

In October 2003, in efforts to better understand how the Hoover Dam Bypass project will impact bighorn sheep, the Federal Highway Administration, National Park Service and Nevada Department of Wildlife cooperated in capture of 20 bighorn sheep subsequently fitted with GPS and VHF telemetry subsystems. The near-term objective is to monitor bighorn movements and distribution before and during construction phases. Ultimately, as the project nears completion, bighorn movement and distribution data are anticipated to illuminate impacts that may be addressed and mitigated, as well as impacts that may be irreversible.

Population Status and Trend

The southern Eldorado Mountains support a low-density resident bighorn herd as well as a fall migrant segment from the northern portion of the range. The 2007 desert bighorn sheep population estimate for the herd inhabiting the entire Eldorado Mountains (Units 265 and 266) is 190, and approximates the estimate reported last year.

Unit 267, Black Mountains: Eastern Clark County

Report by: Patrick Cummings

Survey Data

No aerial survey was conducted in 2006. In October 2005, a 5.0-hour aerial survey conducted in the Black Mountains yielded a sample of 98 bighorn sheep. The observed sex and age ratios were 33 rams and 45 lambs per 100 ewes. The observed proportion of lambs-to-ewes was last surpassed in 1988 when 316 sheep were classified during an aerial survey.

Population Status and Trend

Recruitment of young animals into the bighorn sheep herd inhabiting the Black Mountains has been below levels necessary to maintain the population. Aerial survey data (i.e., lamb-to-ewe ratio, sheep per hour, total observed) portray a steady population decline that began in the latter half of the 1980s. More recently, results of the 2005 aerial survey were encouraging and suggested increased recruitment in 2006.

Desert bighorn sheep occupying the Black Mountains and Muddy Mountains comprise a single population given the high degree of movement between ranges. However, environmental conditions and local population dynamics have differed markedly. Over the long term, aerial survey data portray a decline in the number of desert bighorn sheep inhabiting the Black Mountains while the adjacent Muddy Mountain segment expanded.

The 2007 desert bighorn sheep population estimate for the Black Mountains and Muddy Mountains is 800, and reflects an increase over the estimate of 750 reported last year.

Unit 268, Muddy Mountains: Clark County
Report by: Patrick Cummings

Survey Data

In September 2006, a 6.3-hour aerial survey conducted in the Muddy Mountains yielded a sample of 254 bighorn sheep. The observed sex and age ratios were 94 rams and 60 lambs per 100 ewes. The noted lamb-to-ewe ratio was among the highest on record. Bighorn sheep were encountered throughout much of the survey route, which included the east half of the Muddy Mountains and Muddy Peak.

Population Status and Trend

Desert bighorn sheep occupying the Black Mountains and Muddy Mountains comprise a single population given the high degree of movement between ranges. However, environmental conditions and local population dynamics have differed markedly. Over the long term, aerial survey data portray a decline in the number of desert bighorn sheep inhabiting the Black Mountains while the adjacent Muddy Mountain segment expanded.

In October 2003, a bighorn sheep capture and removal operation was conducted in the Muddy Mountains to achieve an augmentation of the herd inhabiting the Delamar Range. Ten sheep comprised of 6 ewes, 1 female lamb and 3 male lambs were captured from the eastern portion of the Muddy Mountains.

The 2007 desert bighorn sheep population estimate for the Black Mountains and Muddy Mountains is 800, and reflects an increase over the estimate of 750 reported last year.

Unit 271, Mormon Mountains: Lincoln County
Report by: Mike Scott

Survey Data

No formal surveys were completed during the reporting period. The previous survey was conducted in September 2005 and resulted in the classification of 140 sheep consisting of 39 rams, 70 ewes, and 31 lambs for a ratio of 56 rams / 100 ewes / 44 lambs.

Population Status and Trend

The population estimate is 180 animals, compared to 180 in 2006.

Unit 272, Virgin Mountains and Gold Butte: Northeastern Clark County
Report by: Patrick Cummings

Survey Data

In September 2006, a 5.2-hour aerial survey conducted in the Virgin Mountains and Gold Buttes yielded a sample of 62 bighorn sheep. The observed sex and age ratios were 70 rams and 37 lambs per 100 ewes. Bighorn sheep were encountered in the Whitney Pocket area, Iceberg Canyon, Bitter Ridge and the north end of Lime Ridge.

Habitat

In May 2004, the Virgin #1 water development was constructed northwest of Whitney Pocket as a measure to enhance habitat prior to the bighorn sheep release (augmentation) that was accomplished in October 2005. On March 18, 2006, Virgin #2 was constructed north of Whitney Pocket.

Bighorn sheep habitat in the Hiller Mountains has remained in degraded state due to an expanding burro population and severe drought conditions. In 2002, the National Park Service removed an unspecified

number of burros from the Hiller Mountains. Despite above average precipitation receipts from early 2003 through late 2005, preferred forage plant species (i.e., native bunch grasses) have been largely eliminated due to overgrazing by burros. A bighorn sheep release in the Hiller Mountains was approved in Fiscal Year 1996. However, the augmentation was never accomplished due to degraded habitat conditions. In March 2007, the National Park Service and Bureau of Land Management intend to conduct a burro gather/removal in areas south of Bonelli Peak.

In July 2006, lightning strikes ignited four wildland fires in the southern portion of the Virgin Mountains. The aptly named Whitney Pass Fire consumed vegetation across 230 acres on the northeast end of Whitney Ridge. The Virgin Gold Fire burned to within yards of the Virgin #2 water development before a slurry drop extinguished the fire in the immediate area of the project. The Virgin Gold Fire consumed mid-elevation (Mojave desert scrub) and upper-elevation (piñon-juniper woodland) vegetative communities across 2,700 acres. At its northern point, the Virgin Gold Fire burned to within a half mile of the Virgin #1 water development. The Jeep Fire occurred northeast of the Virgin #1 water development in the vicinity of the Virgin Gold Fire, and consumed vegetation over 196 acres. East of the Key West Mine, the Double Nickel Fire consumed vegetation across 523 acres.

In late June 2005, lightning strikes in the Gold Buttes ignited the Fork Fire and Tramp Fire. Landmarks within the burned areas included: Tramp Ridge, Gold Butte, Mica Peak, Cedar Basin, Jumbo Peak, Jumbo Basin, Anderson Ridge, Rattlesnake Peak, Garnet Valley and the north face of Bonelli Peak. Burned over areas with remaining small mosaics of vegetation included: Tramp Ridge, Gold Butte, Cedar Basin and Mica Peak. Extensively burned areas with little to no remaining vegetation included: Jumbo Peak, Jumbo Basin, Anderson Ridge, Rattlesnake Peak, Garnet Valley and the north face of Bonelli Peak. In addition, vegetation associated with approximately 11 springs and at least seven wash complexes were impacted by fire. The Fork Fire consumed plants over 44,314 acres along a 3,300'-elevation gradient (2,460' to 5,760') within three vegetative associations: Creosote-Bursage Flats, Mojave Desert Scrub, and Pinyon-Juniper Woodland. The Tramp fire consumed vegetation over 26,817 acres.

Population Status and Trend

In recent years, few bighorn sheep are found to inhabit the Virgin Mountains; most occur in the southern portion of the unit commonly referred to as the Gold Buttes. In October 1998, 20 bighorn sheep (1 ram, 12 ewes, and 7 lambs) captured in the Muddy Mountains were released north of Bonelli Peak. Based on monitoring data from 3 telemetered ewes, some bighorn sheep dispersed from the release site. Results of 4 aerial surveys conducted since 2000 suggest the 1998 augmentation did not hastened expansion of the population segment inhabiting the Gold Buttes.

In October 2005, in accordance with NDOW's biennial *Big Game Release Plan (FY 2006-07)*, 25 bighorn sheep were released at Virgin #1 water development. The release contingent was comprised of 17 ewes and 8 lambs. Eight ewes were fitted with conventional VHF radio telemetry subsystems. Shortly after the release, 4 ewes were known to have died. Three ewes succumbed to capture myopathy. The proximate cause of death of the fourth ewe was predation, although capture myopathy may have been an underlying factor.

In October 2006, 27 bighorn sheep were released midway between Virgin #1 water development and Whitney Pocket. The release contingent was comprised of 22 ewes and 5 lambs. Nine ewes were fitted with conventional VHF radio telemetry subsystems. By late February 2007, 5 telemetered ewes had died. The cause of death among 3 ewes was predation, while the death of another was determined not to be the result of predation. Due to extreme difficulty in accessing the site of the remaining known mortality, no investigation into cause of death was conducted.

The population estimate for bighorn sheep population inhabiting the Gold Buttes and Virgin Mountains is 100, and reflects the augmentation in fall 2006.

Unit 280: Spotted Range: Northwestern Clark County
Report by: Patrick Cummings

Survey Data

In September 2006, a 3.8-hour aerial survey conducted in the Spotted Range yielded a sample of 73 bighorn sheep. The observed sex and age ratios were 38 rams and 45 lambs per 100 ewes (Table 1). Bighorn sheep were encountered on South Ridge near Spotted #5 water development and on the north end of the range in proximity to the three northern most water developments.

Table 1. Bighorn composition obtained through aerial surveys in the Spotted Range

Year	Rams	Ewes	Lambs	Total	Rams/100 Ewes/Lambs
2000	18	20	10	48	90/100/50
2001	32	26	5	63	123/100/19
2002	13	18	6	37	72/100/33
2003	7	13	1	21	54/100/8
2004	11	21	11	43	52/100/52
2005	23	49	9	81	47/100/18
2006	15	40	18	73	38/100/45

Population Status and Trend

The bighorn sheep population in Unit 280 was established through releases in 1993 and 1996. The initial release complement captured from the River Mountains, Clark County was comprised of 2 rams, 13 ewes and 10 lambs. The 1996 release contingent was also obtained from the River Mountains and consisted of 8 rams, 16 ewes and 1 lamb. In 2007, the number of bighorn sheep inhabiting the Spotted Range is estimated at nearly 90, and reflects a small increase relative to the estimate reported last year. Habitat improvements in the Spotted Range include 6 water developments.

Unit 281, Pintwater Range: Northwestern Clark County
Report by: Patrick Cummings

Survey Data

In August 2006, a 5.3-hour aerial survey conducted in the Pintwater Range yielded a sample of 97 bighorn sheep. The sample was the largest recorded in the last 17 annual aerial surveys, and surpassed in 1988 when 104 sheep were classified. The observed sex and age ratios were 77 rams and 43 lambs per 100 ewes.

Population Status and Trend

In the Pintwater Range, the 2007 bighorn sheep population estimate is 140, and reflects a small increase relative to the estimate (130) reported last year.

Unit 282, Desert Range and Desert Hills: Northwestern Clark County
Report by: Patrick Cummings

Survey Data

In September 2006, a 3.7-hour aerial survey conducted in the Desert Range yielded a sample of 52 bighorn sheep. The observed sex and age ratios were 33 rams and 40 lambs per 100 ewes. The noted lamb-to-ewe ratio was among the highest on record. The majority of bighorn sheep were encountered on the southern end of the range within 3 miles of the two southernmost water developments.

Population Status and Trend

The 2007 bighorn sheep population estimate is 80 animals, and reflects an increase relative to the estimate (70) derived last year. Historically, many of the bighorn sheep occupying the Desert Range were fall and winter migrants from the adjacent Sheep Range. Over the long term, the observed proportion of lambs to ewes obtained through aerial surveys has been low. In view of aerial surveys conducted annually since 1986, the average lamb to ewe ratio is 20.

Unit 283, 284, East Desert Range and Sheep Range: Northern Clark County

Report by: Patrick Cummings

Seasons, Hunt Quotas and Harvest Results

In 2003, unit designations in Area 28 were simplified. The 4 units comprising the Sheep Range and East Desert Range were consolidated into 2 units. Former Units 283 and 287 were designated Unit 283; former Units 284 and 285 were designated Unit 284.

Survey Data

In 2006, aerial bighorn sheep surveys were conducted in the Sheep Range, Enclosure Ridge, East Desert Range, Black Hills and Mule Deer Ridge. In the course of 16.8 survey hours over 4 days, 129 bighorn sheep were observed of which 2 were not classified. The observed sex and age ratios were 63 rams and 38 lambs per 100 ewes. In mid October 2006, observability was substantially reduced during aerial surveys conducted in the northwest Sheep Range and southwest Sheep Range, as low temperatures discouraged removal of aircraft doors.

Habitat

In the last 3 years (2004-06), wildland fires sparked by lightning strikes during summer months have burned vegetation along thousands of acres on the east side of the Sheep Range. In bighorn sheep habitat, fires consumed vegetation at low, mid and high elevations. Much of the fire-caused damage occurred at low elevations. Present concerns relate to the likely establishment of fire-adapted invasive and exotic annual grasses at low and mid elevations.

Population Status and Trend

The 2007 population estimate for bighorn sheep inhabiting Units 283 and 284 is 190 animals, and reflects a decrease relative to the estimate (200) reported last year.

In an effort to hasten recovery of the bighorn population in the Sheep Range, and in conformance with NDOW's Big Game Release Plan, 35 sheep captured in late October 1998 from the Muddy Mountains, Arrow Canyon Range, and Specter Range were released at the mouth of Joe May Canyon. Subsequent monitoring efforts and aerial survey data suggest the release was not effective in achieving the objective.

Unit 286, Las Vegas Range: Clark County

Report by: Patrick Cummings

Survey Data

In October 2006, a 6.1-hour aerial survey conducted in the Las Vegas Range yielded a sample of 56 bighorn sheep. The observed sex and age ratios were 47 rams and 18 lambs per 100 ewes. The noted lamb-to-ewe ratio was among the lowest on record. Bighorn sheep were encountered on Gass Peak, Fossil Ridge and unburned areas near water sources. Wildland fires in 2004 and 2005 consumed vegetation over extensive areas in the Las Vegas Range, and limited the scope of the survey.

Habitat

In 2004 and 2005, wildland fires sparked by lightning strikes during summer months burned vegetation along thousands of acres in the Las Vegas Range. In bighorn sheep habitat, fires consumed vegetation at low, mid and high elevations. Much of the fire-caused damage occurred at low and mid elevations. Present concerns relate to the likely establishment of fire-adapted invasive and exotic annual grasses at low and mid elevations. Members of the Fraternity of the Desert Bighorn and NDOW personnel repaired fire-caused damage to three water developments (Juniper Peak, Hidden Valley and Frozen Toe).

The Las Vegas Range is situated immediately north of the Las Vegas valley, and in recent years, suburban development has approached the southern boundary of the Desert National Wildlife Range. Increasingly, off-highway-vehicle (OHV) use has resulted in proliferation of unauthorized roads and trails. Despite federal regulation prohibiting the use of unlicensed vehicles on the refuge, the newly established network of roads and trails allows OHV users access to formerly undisturbed bighorn habitat.

Population Status and Trend

The 2007 population estimate for bighorn sheep inhabiting the Las Vegas Range is 140, and reflects a decrease relative to the estimate (150) reported last year. Fires that occurred during summer months in 2004 and 2005 impacted approximately half of the bighorn sheep habitat in the Las Vegas Range. Post-fire establishment of fire-adapted invasive and exotic annual grasses at low and mid elevations is expected. The Las Vegas Range supports a resident bighorn population, and during cooler months, a migrant segment from the Sheep Range.

CALIFORNIA BIGHORN SHEEP

Unit 012, Calico Mountains and High Rock Canyon: Western Humboldt and Washoe Counties

Report by: Chris Hampson

Survey Data

Composition surveys were conducted in Unit 012 during the first week of September 2006. A sample of 114 bighorn was obtained and resulted in a composition ratio of 96 rams/100 ewes/64 lambs. The sample was made up of 42 rams, 44 ewes and 28 lambs. The record sample for this unit of 151 animals was obtained in 2004. Bighorn sheep surveys were not conducted in 2005 and less flight time was expended this year than in 2004. Areas surveyed this year included portions of the Calicos Mountains, McConnel Creek to Little High Rock, High Rock Canyon, Pole Canyon, and the Chukar Gulch area.

Population Status and Trend

The proposal to build several water developments in the High Rock Canyon area was denied by the Bureau of Land Management due to various conflicts related to wilderness designation. NDOW disagrees with the BLM's position and their decision to not allow the proposed guzzlers to be constructed. The guzzlers were proposed to be built to allow bighorn that live in the High Rock Canyon area water sources that were reliable and free of competition from wild horses. The guzzler locations were also picked to better manage bighorn distribution and facilitate movement of bighorn within the High Rock Complex. However, NDOW does support some of the BLM's alternatives such as riparian and spring protection and removal of wild horses to maintain the horse population at the lower end of the Appropriate Management Level (AML). The BLM gathered horses this past September and removed a total of 350 horses from the High Rock and Little High Rock areas. The BLM is hoping to remove another 50+ animals in 2007 to bring horse numbers down to the low end of the AML. Riparian and spring sources in the High Rock Canyon area and in many other areas within the hunt unit are currently in poor condition and competition with wild horses has been a serious issue.

The Calico/High Rock/Little High Rock bighorn population continues to expand. The lamb ratio of 64 lambs per 100 ewes observed this year is above the long-term average recruitment for this herd. In 2004, the lamb ratio was observed to be 43 lambs per 100 ewes. Ram ratios remain very strong and good numbers of older aged class rams are still present in the population. The strong recruitment values observed this year will allow this herd to continue on an upward trend. Habitat conditions within the unit improved in 2005 and 2006 due to the above average precipitation received. However, 2007 is shaping up to be much drier and precipitation averages and snowfall amounts are expected to be well-below normal for the year. This will negatively effect water availability and forage condition next summer. The removal of 20 bighorn in 2004 may also have played a role in stimulating production within this bighorn herd. The herd continues to expand its range and densities of bighorn in core areas are increasing slowly as the population expands. Observations of bighorn in areas where they have not been observed before are proof that the herd is expanding its distribution. The 2006 estimate for this herd has increased to 190 animals.

Unit 011, 013, Vya Rim, Massacre Bench and Hays Canyon Range: Washoe County

Report by: Chris Hampson

Survey Data

Bighorn sheep composition surveys in Unit 013 were completed along with post-season deer surveys in mid-November. Fifty-seven sheep were located in the Hays Canyon Range and 2 rams were observed on the Massacre Bench in Unit 011. A total of 59 bighorn were classified as 20 rams, 27 ewes and 12 lambs for a composition ratio of 74 rams/100 ewes/45 lambs. Surveys were hampered somewhat by strong winds and downdrafts in the canyons. Most bighorn were located in Hays Canyon or near Little Hat Mountain. The heavy tree cover on the western slopes of the range can make it difficult to locate and classify sheep in this unit.

The initial release in the Hays Canyon Range of 15 bighorn took place in 1989. A second augmentation of 17 additional animals was released in 1995. Bighorn observed in recent years in the Massacre Bench area of Unit 011 have pioneered southward into the area from the Long Valley Rim on the western edge of the Sheldon. Movement of bighorn from Oregon into Nevada has also been observed in the Coleman Rim area of Unit 011. Reports of bighorn on the Vya Rim in Unit 011 have increased in recent years and are more than likely sheep moving north out of the Hays Canyon Range.

The recruitment level observed this year of 45 lambs per 100 ewes is 10 lambs per 100 lower than the long-term average for this herd. In 2005, recruitment was very good and measured at 67 lambs per 100 ewes. Over the last few years, increasing numbers of bighorn have been observed on the southern portion of the range south of Hays Canyon. The movement of bighorn to the south-end of the range puts the bighorn closer to domestic sheep grazing and trailing routes and increases the likelihood of nose to nose contact. As the Hays Canyon bighorn population expands, the likelihood for a disease related die-off due to interactions with domestic sheep or goats increases. Future water developments built on the top of the rim will help keep bighorn away from the valley bottoms where domestic sheep are grazed and trailed.

Ram ratios appear to be stable within the 013 bighorn population. However, both the computer model and observations made by hunters over the last 2 years indicate that there are currently fewer older aged classed rams in the population. Despite the fact that more bighorn have been observed on the southern end of the range in recent years, the core sheep areas remain in and around the release site at Hays Canyon and near Little Hat Mountain. The densities of bighorn will continue to slowly increase as the population distributes itself throughout the Hays Canyon Range.

Population Status and Trend

The population estimate for this bighorn population will increase slightly but will remain similar to the 2006 estimate of 110 bighorn. NDOW quota recommendations for Unit 013 in 2007 may decrease a single tag due to the lower number of mature rams available for harvest.

Unit 014, Granite Range: Washoe County

Report by: Chris Hampson

Survey Data

Composition surveys were conducted in early September 2006. The northern portion of the Granite Range population was surveyed with 32 animals being classified as 10 rams 14 ewes and 8 lambs. The ratio for the sample was determined to be 71 rams/100 ewes/57 lambs. Surveys conducted in the southern portion of the range were once again hampered by strong winds. The very top of the range was flown for approximately 15 minutes in an attempt to classify both bighorn and mule deer. No bighorn were observed. Another 10 to 15 minutes was expended on the steep slopes on the southwestern portion of the range attempting to locate the bighorn from the 2004 release. No sheep were observed. Telemetry gear was used to try and help locate and observe the 2 collared ewes from the 2004 release. The 2 frequencies were heard but the 2 sheep were not observed. The frequencies indicated that the 2 ewes remain in close proximity to the release site. Heavy tree cover and the steep topography make locating bighorn very difficult in this area.

Population Status and Trend

The Negro Creek subpopulation continues to grow and expand. The ratio of 57 lambs per 100 ewes obtained from the fairly small sample of 32 sheep indicated continued herd growth for this portion of the herd. We have not been able to obtain a good sample from the sheep on the south-end of the range. Despite this fact, other factors indicate that survival is good and that production and recruitment of lambs is occurring. The 2 collared ewes remain alive and are consistently located near the release site. Tracks and pellets continue to be observed and indicate that lambing is occurring on the south end of the range.

The 2 bighorn harvested during the 2006 hunting season were the 2 largest sheep ever taken in the Granite Range since hunting began in 1988. The rams were both harvested from the Negro Creek subpopulation on

the north end of the range. The 2 rams scored 151 and 154 B&C inches and were 6 and 7-years of age. One hunter harvested his ram after 2 days of hunting while the second hunter took just 3 days. The season was re-opened in 2005 after being closed between 2001 and 2004. Sufficient older age class rams exist in the population to continue to allow for limited hunting opportunity.

The 2007 estimate for the 014 bighorn population is approximately 80 animals, which is an increase from the previous year's estimate of 70 bighorn.

Unit 022, Virginia Mountains: Washoe County
Report by: Chris Hampson

Survey Data

Approximately, 30 minutes of flight time was expended surveying Unit 022 for bighorn in early September 2006. Only 5 rams were observed on the survey. The age classes of the rams were 3 rams aged 2 to 3 years of age, 1 ram at 5-years of age, and 1 ram aged at 6 years. No ewe/lamb groups were located during the aerial survey. Three ewes and a single lamb were observed during a ground survey in November. Access to bighorn habitats is limited due to Reservation lands and private ownership. Heavy tree cover along with the steep topography and excellent escape cover can make it difficult to locate bighorn in this hunt unit. NDOW did receive one report of 40 plus ewes and lambs and 16 rams in Big Canyon earlier this year. This report has not been verified but is believed to be credible.

Population Status and Trend

A recent decision by Washoe County and other local governments to incorporate the Winnemucca Ranch area for future development will negatively impact wildlife populations living in the area. The area is considered some of the most important wildlife habitat within 50 miles of the Reno Sparks area. The abundant spring sources and meadows draw numerous species of wildlife to the area. The northern portion of the Virginia Mountains supports not only the Virginia Mountain bighorn sheep herd but is also critical habitat for a multitude of other animals such as mule deer, pronghorn, sage-grouse and numerous non-game species. The direct impacts from the actual construction of the planned community, roads, and construction of trails into remote areas will negatively impact important habitats and cause displacement of wildlife species away from these critical habitats. The indirect impacts from such things as increased human activity, pets, vehicle traffic, and noise will further effect wildlife populations. The proposed developments in Winnemucca Valley are expected to bring an additional 20,000 to 30,000 people to the valley over the next decade.

The bighorn sheep hunting season in Unit 022 has been closed since 2000. NDOW is recommending that the unit re-open to sheep hunting in 2007. The hunt could be challenging with regard to limited access and the low density of sheep in the unit. A total of 5 rams were harvested from the unit between 1997 and 2001 and averaged 5.8 years of age. The current population estimate for the low density herd is estimated at between 50 and 60 bighorn. A single tag will be recommended for this hunt in 2007.

Unit 031, Montana and Trout Creek Mountains: Humboldt County
Report By: Ed Partee

Survey Data

Aerial surveys for bighorn were conducted in September 2006 in conjunction with pronghorn flights. Geographic areas flown included the Trout Creek Mountains, Montana Mountains and the Double H Mountains. A total of 104 animals were surveyed yielding a ratio of 42 rams/100 ewes/55 lambs. Sheep numbers in this unit are doing very well. Sheep have spread throughout these areas and lamb production continues to increase. During this survey one group of sheep classified had 70 ewes and lambs. This survey produced the most ewes and lambs ever classified in this unit. With sheep numbers in this unit on the rise we may reach the carrying capacity of this unit in the near future.

Habitat

With abundant amounts of spring moisture that have been received over the last 2 years grasses and forbs have been very abundant. This has provided excellent amounts of forage during lambing periods which has been critical for production. Water sources for sheep have been abundant throughout the year which has benefited sheep during the summer months. The west face of the Montana Mountains was affected by wild land fires in 2006. Three different fires occurred on the west face that all merged together to encompass an area from Horse Creek to just south of Garden Pond. This area has been utilized during the winter months when snow loads are heavy on top of the range. Sheep are still utilizing those areas unaffected by the burn.

Population Status and Trend

The population estimate for this unit is approximately 150 animals. We have seen a steady climb in the population since the initial release took place in 1994. Continued mild winters and ample amounts of moisture in the spring have lead to the increases in sheep numbers. Due to increases in the population a trapping operation was conducted in December 2006 to reduce densities of bighorn in the Montana Mountains. Nineteen ewes and lambs and 2 young rams were removed from the population and relocated into the Santa Rosa Range.

Unit 032, Pine Forest Range and McGee Mountain: Humboldt County

Report by: Ed Partee

Survey Data

Aerial surveys were conducted during the middle of September in conjunction with pronghorn flights. Three mountain ranges were surveyed in this unit which included the Pueblos, Mc Gee Mountain and the Pine Forest Range. A total of 120 animals were observed during these flights yielding a ratio of 76 rams/100 ewes/69 lambs. The Pine Forest portion of this unit is doing very well. Sheep in this portion are well distributed throughout the range. McGee Mountain continues to produce high lamb ratios and sheep are dispersed throughout the range due to the availability of new water sources.

Habitat

During the past 2 years large amounts of moisture received have produced good forage conditions during critical lambing periods. Range conditions the last few years have been ideal with good availability of forage and water. One wild land fire occurred in this unit in 2006 (Pine Forest) which occurred outside sheep use areas. This fire had the potential to burn into some sheep use areas; however, it was contained prior to affecting these areas.

Population Status and Trend

The 2006 population estimate for this unit is approximately 165 animals. This unit continues to be very stable. Declines in this population over the last fifteen years have been directly tied to captures that have taken place in this unit. After captures the population has rebounded with increased lamb production and remained stable once precapture numbers were reached. Added water developments have had a positive affect on growth and distribution of sheep on Mc Gee Mountain. This area still produces high lamb ratios, which has made it an ideal source stock for future transplant efforts.

Unit 033, Sheldon National Wildlife Refuge: Washoe and Humboldt Counties

Report by: Chris Hampson

Survey Data

Bighorn surveys were conducted in conjunction with post-season mule deer surveys in November. The composition surveys located a fairly small sample of 27 sheep. The ratio for the small sample was 50 rams/100 ewes/75 lambs. Due to delays caused by mechanical problems with the helicopter, the bighorn

surveys on the Sheldon that normally occur in September were put off and added to the post-season deer surveys in November. Bighorn are not as dependent on water sources at this time of year and are often scattered over a much larger area. The difference in timing can make locating bighorn much more difficult and time consuming. Most of the major use areas were flown on the Sheldon but few sheep were observed.

Habitat conditions on the Sheldon varied considerably from area to area and it appears that precipitation receipts varied significantly. Most areas on the southern-half of the refuge appeared to be in good condition with plentiful water and improved vegetative condition. However, further to the north, most areas appeared to have received very little precipitation and many of the water sources on the tables were completely dry.

Ram ratios within the Sheldon bighorn population are believed to be fairly stable and are best represented by the 1998 survey that located a total of 112 animals with 32 of them being rams. The survey resulted in a ram ratio of 62 rams per 100 ewes. Hunters reported observing between 14 and 20 different rams during the 2006 hunting season. All age classes of rams were represented.

Population Status and Trend

Due to the later timing of this year's survey, bighorn were widely scattered and much more difficult to locate. However, the small sample did provide an encouraging lamb ratio of 56 lambs per 100 ewes. Bighorn numbers and population trend for the Sheldon population have been stable to slightly increasing over the last several years. Due to the small sample a more conservative long-term average lamb ratio was used in this years modeling process. The computer model for the Sheldon bighorn population shows a slightly increasing trend with an estimate of around 180 animals.

Unit 034, Black Rock Range: Humboldt County

Report by: Ed Partee

Survey Data

A total of 32 sheep were surveyed in this unit which is below the past 5 year average of 53. This survey yielded a ratio of 50rams/100ewes/79 lambs. This unit was surveyed in conjunction with pronghorn surveys in mid September and splitting survey effort between the 2 species may have resulted in a lower number of bighorn observed. Despite the lower number of animals surveyed in this unit lamb ratios were relatively high. Animals appear to be dispersing throughout this range which has been a result of new water development as well as an increase in available free water during the last 2 years.

Habitat

During the last 2 springs, abundant amounts of precipitation have increased the amount of grasses and forbs that have been available. This has lead to ideal conditions during lambing periods and helped sustain sheep in good condition throughout the summer months. Range conditions are holding stable in this unit after the removal of wild horses a few years ago. However, it appears that horse numbers may be increasing which may have future impacts on available forage and water in this unit. During this survey period which occurred in mid September, good conditions were observed around water sources, and forage was still in relatively decent shape. With these types of conditions animals should have entered the winter months in good condition.

Population Status and Trend

The population estimate for the Black Rock Range is approximately 190 animals. Sheep numbers have steadily increased over the last 10 years. Many factors can be attributed to increases in this unit. Water and range conditions have recently played a major role as well as the removal of competition from non-native species. Another major factor has been the absence of wild land fires in this area. This unit has produced quality mature rams the last few years. Increased water availability from water developments have helped this population significantly. High lamb recruitment observed this year will strengthen the population estimate for this unit.

Unit 035, Jackson Mountains: Humboldt County
Report by: Ed Partee

Survey Data

This unit was not surveyed in September as were other sheep units in Management Area 3 because of various time constraints and weather related problems. Aerial surveys were attempted in November during post season deer surveys but weather again hampered flights. Only 10 sheep were observed during this limited survey. This survey resulted in numbers well below the 5 year average. Sheep were located around King Lear, Alaska Canyon and Happy Creek. Unfortunately only 1 animal was located around King Lear where past surveys have yielded the majority of the animals. In Alaska Canyon 4 animals were observed while in Happy Creek a total of 5 animals were observed.

Habitat

Like other units in Management Area 3, plenty of moisture has been received in this unit resulting in good quality forage and water availability. Range conditions are good with only some areas being affected by wild horses. Horse numbers have been reduced on the south end of the range improving conditions.

Population Status and Trend

The population estimate for this unit is near last years estimate of 170 animals. This unit's population has fluctuated slightly up and down the last 10 years. One of the limiting factors for expansion of this herd is the availability of water that is not affected by non-native species. The quantity and quality of forage in this unit seems to be doing well which is sustaining the population. With the continuing mild winters we have not seen any major winter loss in this area.

Unit 041, Sahwave Mountains, Pershing County
Report by: Kyle Neill

Survey Data

An aerial composition survey was conducted in Unit 041 on 25 January 2007. Areas surveyed during the 3 hour flight included the Sahwave and Bluewing Mountains, Selenite and Nightingale Ranges. A total of 7 bighorns were observed in the Sahwave Mountains. They were classified as 1 ram, 5 ewes and 1 lamb, which provided a ratio of 20 rams/100 ewes/20 lambs. The lamb ratio of 20 lambs/100 ewes is the lowest observed lamb ratio in Unit 041 and is below population maintenance level.

Population Estimate and Trend

Since 2002, survey sample size has continued to decline in the Sahwave Mountains. Tag holders have also continued to report observing less bighorns while in the field. In 2006, the Unit 041 tag holder reported observing zero bighorns in the Sahwaves. However, the tag holder harvested a ram and observed 4 ewes north of Tunnel Springs, which is approximately 4 miles North West of Juniper Mountain.

Biologists believe the decline of bighorns in the Sahwave Mountains is due to the combination of immigration into other mountain ranges in Unit 041, unconfirmed die-off from domestic sheep, low lamb recruitment and predation. Currently, there are 2 active domestic sheep permitees who utilize the Sahwave Mountains. Domestic sheep use has been observed within 2 miles from areas known to be used by California bighorns.

The 2007 California bighorn sheep population estimate for Unit 041 is 30 animals. Last year's estimate was 40 animals. This herd, which pioneered into the Sahwaves sometime in the late 1980's or early 1990's continues to decline slightly each year. Due to the lack of available mature rams there will be no hunting season recommended for at least 2 years.

Unit 051, Santa Rosa Range: Humboldt County
Report by: Ed Partee

Survey Data

A survey was conducted at the beginning of March 2007 in this unit. A total of 125 animals were surveyed during this flight yielding a ratio of 90 rams/100 ewes/60 lambs. All 3 sub populations were surveyed during 6 plus hours of survey time. These included sheep in Eight Mile Canyon, Hinkey Summit/Buttermilk Summit and Andorno/Sawtooth Mountain. Weather conditions were good during the survey with light winds and good light. Animals located on this survey were well distributed throughout the range. Eight mile Canyon yielded 65 animals, Andorno/Sawtooth Mountain had 33 animals and 27 animals were observed on the Hinkey Summit side. Lamb recruitment was good throughout the range and has been closely monitored especially on the south end of the range since the 2003-04 die off occurred.

Habitat

The Santa Rosa Mountain Range has received plenty of moisture over the past 2 years. Good forage conditions have benefited sheep in the Santa Rosa Range. No major fires took place this past year that would have negatively affected sheep in this range. A future concern for bighorn habitat loss may be associated with additional mining exploration that has the potential to displace sheep from the north west portion of the mountain range near the old National Mine site. Proposals have been made for additional exploration to start in 2007.

Population Status and Trend

The population estimate for this unit is approximately 180 Bighorn Sheep. This population is starting to show an upward trend. In December of 2006 a release was conducted in this range. A total of twenty-one sheep were released in the Martin Creek Drainage on the south eastern portion of the range. The release compliment consisted of 2 young rams and 19 ewes and lambs. This will boost the population numbers for this range. Over the past 2 years surveys have revealed an increase in the lamb ratios resulting in good recruitment into the population. The population estimate is still relatively low compared to estimates prior to the die off that occurred in 2003. Based on the March survey sheep within this range appear to be in good condition. Ratios observed on this flight suggest a continued increase in this population. This unit received ample spring moisture resulting in quality grasses and forbs throughout 2006 year. The last 3 winters have been mild resulting in good survival. Good forage availability in early spring has provided for good nutrition during the lambing periods. This area will be monitored continually throughout the year to evaluate the status of these sheep as well as continued future lamb recruitment into this population. If weather and range conditions remain favorable we may see this population rebound to pre 2003 numbers.

Units 066, 068, Snowstorm and Sheep Creek: Western Elko and Northern Lander and Eureka Counties
Report by: Ken Gray

Tag Quotas and Harvest Results

Four tags were available for combined Units 066 and 068. 2 hunters were successful in harvesting a ram in 2006, 1 hunter was unsuccessful and 1 hunter did not hunt. One ram was harvested in Unit 066 and 1 was taken in Unit 068. The average age for the 2 rams was 6.0 years and the average B&C score was 146.

Survey Data

A helicopter survey was conducted in Unit 066 in August of 2006. A total of 84 sheep was classified. The sex and age ratios were 59 rams/100 ewes/ 56 lambs. This sample is the highest ever observed within this unit. The ram ratio was 11 rams/100 ewes higher than the average of the past 10 surveys while the lamb

ratio was 11 lambs/100 ewes above the average of the past 10 surveys. A total of 17 bighorns were classified in Unit 068 during spring deer surveys in March of 2007. The sex and age ratios were 15 rams/100 ewes/15 lambs.

Habitat

The Winters Fire burned through the South Fork of the Little Humboldt River Gorge in Unit 066. The Sheep Fire burned all of Black Mountain and portions of the Rock Creek Gorge in Unit 068. Bighorn sheep used these areas extensively. Fortunately, most of the habitat that burned was in good ecological condition, which should help facilitate the recovery of these important sheep habitats.

In June of 2006, 2 1,600 gallon Boss Tanks, a new apron and a pipe rail fence were added to an existing guzzler in the Sheep Creek Range to increase the water capacity. This action was required due to the heavy bighorn use associated with this unit. Elko Bighorns Unlimited paid for this project while the NDOW Water Development Crew coordinated the effort.

Population Status and Trend

Bighorn sheep numbers continued to increase in unit 066 but were stagnant in Unit 068. Sheep were well distributed within the Snowstorm Range once again. The ram harvested in Unit 068 was the first killed in this unit in 4 years.

ROCKY MOUNTAIN BIGHORN SHEEP

Unit 074, The Badlands: Elko County
Report by: Kari Martin

Survey Data

A composition survey was conducted in conjunction with spring deer flights in March 2007. A total of 12 bighorns was classified all of which were rams. In December 2006, 2 additional ewes and 1 lamb were classified during fall deer and elk flights.

Habitat

As a result of increased spring and summer moisture last year, the quality of the vegetation available to the bighorn in this area has also increased. This increased forage quantity and quality should aid in the production and survival of lambs.

A heritage project was approved for mineral blocks to be placed in areas of bighorn concentration in the Contact area with the idea of increasing selenium levels in the sheep. Recent vegetation monitoring has found the Contact area vegetation to be low in available selenium. A proposal is being discussed for a project to get baseline data from this herd before placing the blocks in the area.

Population Status and Trend

Since the summer 1999 decline associated with the pneumonia outbreak in herd, it now appears the bighorn population has recovered from the pneumonia bout and lamb survival is improving.

Unit 101, East Humboldt Range: Elko County
Report by: Tony Wasley

Tag Quotas and Harvest Results

In 2006, three sheep tags were issued for Unit 101. This was the same quota as the previous eight years. For specific 2006 hunting season results, please refer to Harvest Tables in the Appendix Section.

Survey Data

Summer helicopter surveys were not conducted in 2006. Instead, winter surveys from the air were conducted. A total of 157 sheep were observed with 35 rams/100 ewes/32 lambs. Lamb recruitment dropped significantly from last year in spite of a predator management project currently underway in this area. This was the lowest lamb ratio observed since 1998 when only 14 lambs/100 ewes were observed. The 2007 lamb ratio follows 4 consecutive years of record high lamb production ranging between 63 last year and 85 in 2004. One possible explanation is that it may in some way be related to the trapping and subsequent removal of 30 sheep from this area in January of 2006. If so, it should be a short-lived phenomenon.

Weather and Habitat

The Rocky Mountain bighorn sheep of the East Humboldt Range may be challenged by a general lack of precipitation and snow pack this year. These sheep live amongst the higher elevations and steeper slopes in the mountains. Fortunately, even in drier years, snow banks accumulate throughout the winter and sustain the high mountain meadows on which bighorn sheep depend for most of the hot and dry summer months. Although below normal in 2007, the accumulated snow pack should help to provide adequate habitat conditions to support bighorn sheep. As long as moderate winters persist and sufficient snowfall occurs in the upper elevations, the sheep should continue to thrive.

Population Status and Trend

The bighorn sheep population in the East Humboldt Range continues to do well. Sheep were first released in the winter of 1992 and each year they appear to learn more about the available habitats and resources in the East Humboldt Range. It is expected that the herd will continue to adopt traditional summer and winter use patterns and migrations over time. Despite this years low lamb recruitment, a healthy distribution of age classes exists due to excellent production realized during the previous 8 years, with numerous high quality rams currently present. Recently, interest in domestic goats for meat production and weed control has grown considerably. As the number of domestic goats increases in this area, so does the potential risk of disease. Hunters who encounter estray domestic goats or observe any abnormal animal behavior, are encouraged to notify the Department of Wildlife and the Department of Agriculture.

Unit 102, Ruby Mountains: Elko County

Report by: Tony Wasley

Survey Data

Helicopter surveys were conducted in the winter of 2006 as opposed to the traditional summer surveys. A total of 98 sheep was observed, with 138 rams/100 ewes/50 lambs. The survey size is slightly more than the 71 observed in 2005 and more similar to the 105 observed in 2004. This population has rebuilt itself well and has distributed itself throughout the Ruby Mountains capitalizing on excellent summer ranges and historic winter ranges.

Weather and Habitat

These sheep live amongst the higher elevations and steeper slopes in the mountains. Fortunately, snow banks accumulate throughout the winter and sustain the high mountain meadows and riparian areas on which bighorn sheep depend for most of the hot and dry summer months. Even in the dry years with little precipitation such as 2007, sufficient snow usually falls in the high country to provide adequate habitat for bighorn sheep. The bighorn sheep in the Rubies are more limited by winter range and can be negatively impacted by heavy spring snow loads covering their forage or prolonging winter conditions. However, over the past few winters, these sheep have recovered nicely and have reacquainted themselves with their previously used winter ranges that provide them with excellent green-up in the spring. As long as moderate winters persist and sufficient snowfall occurs in the upper elevations, the sheep should continue to thrive.

Population Status and Trend

The bighorn sheep population in the Rubies has recovered very well. It is expected that the herd will continue to recover and hopefully exceed pre-die-off numbers. The population is well distributed on both winter ranges and summer ranges and, barring a second catastrophic event, should continue to provide unique viewing and hunting opportunities to those visiting the Ruby Mountains. Recently, however, interest in domestic goats for meat production and weed control has grown considerably. As the number of domestic goats increases in this area, so does the potential risk of disease. Hunters who encounter estray domestic goats or observe any abnormal animal behavior, are encouraged to notify the Department of Wildlife and the Department of Agriculture.

Unit 114, North Snake Range – Mount Moriah: Eastern White Pine County
Report by: Curt Baughman

Background

Rocky Mountain Bighorn sheep were first reintroduced into this unit in 1975 with a release of 16 bighorn from Whiskey Mtn. in the Wind River Range, Wyoming. Additional releases of 15 and 17 bighorn occurred in 1981 and 1990, respectively, from the same source. Annual hunts were held between 1985 and 1991 with a total of 13 tags issued and eight rams harvested. In 1990 a state record was established with a ram scoring 178-4/8 Boone and Crocket points. The hunting season was closed in 1992 due to concerns about population trend and poor recruitment. The population reached low levels in the 1990s, but made a slow recovery in the early 2000s. An augmentation of 30 bighorn occurred in January 2006 when sheep from the Unit 101 - East Humboldt Range population were captured and transplanted. The Unit 101 bighorn herd itself is the product of transplants of bighorn from Alberta, Canada. Telemetry surveys indicate that the bighorn released on Mount Moriah have mixed with resident bighorn and have developed similar habitat use patterns.

Survey Data

A pre-release ground survey was conducted in December 2005. A sample of 27 bighorn was classified with age and sex ratios of 110 rams/100 ewes/60 lambs. With the release of 25 ewes and 5 lambs, approximately 57 bighorn could be accounted for in January 2006. A two-day composition survey was conducted from the ground in January 2007. Seventy-two bighorn were classified with resulting sex and age ratios of 67 rams/100 ewes/ 73 lambs. The 20 rams observed during the survey were well distributed across age classes. Additional sheep were likely missed, since the area of the survey was limited to the portion of bighorn winter range where radio-marked sheep were found.

Habitat

Currently, the bighorn sheep on Mount Moriah utilize open, lower elevation habitats with minimal tree densities during the late fall, winter and spring. Most radio-marked bighorn moved to areas above 10,000' by August, while a few chose to spend most of the summer below the band of higher tree density that circles the unit. The higher precipitation levels of recent years should have been positive for both summer and winter bighorn ranges on Mount Moriah. Water distribution has improved since 2004, including lingering snow banks that maintained high elevation seeps and springs longer into the summer. Although the current snow pack does not measure up to the previous two years, habitat conditions should remain suitable, especially at higher elevations where summer moisture is more abundant. Lower elevation habitats may not be as productive in 2007 without significant additions of spring precipitation. At the present time, habitat limitations are related to the dense band of mixed conifer and mountain mahogany that effectively separates seasonal ranges in much of the area presently occupied by bighorn. This was illustrated by the bighorn that were fitted with GPS satellite transmitters. Rapid transition from high elevation summer range to low elevation winter range was documented when sheep vacated the high country in mid October. Habitat connectivity could be improved and transitional range created through the use of prescribed fire if wilderness status is not a limitation.

Population Status and Trend

Telemetry surveys of released bighorn were conducted often during 2006. Four mortalities were documented during the first seven months. Two of these appeared to be related to mountain lion predation and two were from unknown causes. Personnel from Wildlife Services spent several days in the area following discovery of the predation losses, but were unable to find fresh lion sign. During the January 2007 survey, 23 of a possible 26 marked bighorn were observed, indicating that first year survival of released bighorn was between 77% and 87%. The observation of 22 lambs during the 2007 survey is encouraging, Short-term population modeling indicates an increase of 15 bighorn in the post-release population. It is hoped that the mixing of Alberta and Wyoming bighorn will produce a viable, productive herd.

MOUNTAIN GOAT

Unit 101, East Humboldt Mountains: Elko County
Unit 102, Ruby Mountains: Elko County
Unit 103, South Ruby Mountains: Elko and White Pine Counties
Report by: Tony Wasley

Tag Quotas and Harvest Results

Goat tags have increased from 11 in 1999 to 29 in 2006. Success continues to be good and most hunters reported seeing many goats and numerous billies. For specific 2006 hunting season results, please refer to Harvest Tables in the Appendix Section.

Survey Data

Incidental to deer surveys, helicopter surveys were conducted in March 2006. A total of 48 goats was observed in Unit 101, with a ratio of 30 young/100 adults. A total of 13 goats was observed in Unit 102, with a ratio of 44 young/100 adults. In Unit 103, 30 goats were located, with a ratio of 20 young/100 adults. The below average snowfall that occurred in all of these unit during the 2006/2007 winter may provide the goats with additional challenges on summer range if the snow banks on which they depend do not persist through the summer.

Weather and Habitat

Goats live amongst the highest, rockiest, and steepest slopes in the mountains. Fortunately, snow banks accumulate throughout the winter and sustain preferred forage for goats during most of the hot and dry summer months. Even in the dry years with little precipitation, sufficient snow usually falls in the high country to facilitate goat survival. This year's snowfall should allow goats to utilize most historical use areas. The goats in Nevada, like most goat populations, are more limited by winter range and heavy spring snow loads that cover their forage, limit their movements, or increase their chances of fatalities from falls and avalanches. As long as moderate winters persist and sufficient snowfall occurs in the upper elevations, the goats should remain at stable levels.

Population Status and Trend

Goat populations are exhibiting a stable to upward trend in all three units. According to hunter reports, biologist observations, and aerial surveys, goats appear to be doing very well. Recently, interest in domestic goats for meat production and weed control has grown considerably. As the number of domestic goats increases in this area, so does the potential risk of disease. Hunters who encounter estray domestic goats or observe any abnormal animal behavior, are encouraged to notify the Department of Wildlife and the Department of Agriculture. Other than the increased risk of disease, there are no apparent reasons why we should not continue to enjoy the increased opportunity that this unique trophy species offers.

MOUNTAIN LION

Statewide Season Information

Nevada's mountain lion hunting season has been year-round since 2001. In March 2003, the season was aligned with the License Year, thus running from 1 March to the last the last day of February in the ensuing year. Pursuant to regulations adopted by the Commission in November 2006, the mountain lion season will continue to be year-round under this format through February 28, 2013. Harvest objectives have been established on a Regional basis beginning with the 2002 hunting season. The statewide total objective is 349 and in February 2007 the Commission adopted regulations that continue this harvest objective for the 2007-08 and 2008-09 seasons as well. Regional objectives are described in Table 1 below. Please refer to the Appendix to view a compilation table describing the history of Nevada's mountain lion hunting seasons.

Table 1 –Regional mountain lion harvest objectives for the 2006-07 season.

Region	Units	Objective
Western	011-015, 021-022, 031, 032, 034, 035, 041-045, 051, 181-184, 201-206, 192, 194-196, & 291	114
	033 (Sheldon NWR)	Closed
Eastern	061-068, 071-079, 081, 101-108, 111-115, 121, 131-134, 141-145, 151-155	163
	079*	4
Southern	161-164, 171-173, 211, 212, 221-223, 231, 241-244, 251-253, 261-268, 271-272	68
	280-284, 286	Closed
	Statewide:	**349**

*Unit 079 is an Interstate hunt with Utah. Nevada and Utah hunters may hunt within open units in both states Nevada hunters hunting in Utah must abide by Utah regulations and season dates on the Utah portion of the hunt area.
Unit 079 was split into two units – 079 & new unit Unit 091 beginning with the 2007-08 season (see Eastern Region report).

Western Region – Areas 1 – 5, 18, 19, 20 & 29

Report by: Carl Lackey

Harvest Results

Accounting for all known mortalities, there were 63 mountain lion mortalities for the Western Region during the 2006 – 2007 period (Table 3). This includes 51 animals taken under valid sport tags, 6 by Wildlife Services, 3 hit by vehicles, 3 accidental trapping mortalities and 2 kittens killed to protect dogs while chukar hunting.

Table 2 - Western Region mountain lion sport harvest by area groups for 2006-07 and the previous 5 years.

Area Group	2001-02	2002-03	2003-04	2004-05	2005-06	Average	2006-07
Areas 1, 2, 19	12	14	25	12	14	15.4	24
Areas 3, 4, 5	20	21	18	16	14	17.8	18
Areas 18, 20, 29	7	5	5	5	8	6	9
Totals:	**39**	**40**	**48**	**33**	**36**	39.2	**51**

Table 3 – Western Region mountain lion mortalities by type for 2006-2007.

Management Area Groups	Harvest Objective	Harvest Type			
		Sport	Depredation	Other	Total
1, 2 and 19	Regional 114	24	3	3	30
3, 4 and 5		18	1	2	21
18, 20 and 29		9	2	1	12
Totals:	**114**	**51**	**6**	**6**	**63**

Sport Harvest

The sport harvest consisted of 25 male lions and 26 females, with average ages of 3.7 and 3.3 years respectively. Animals of this age typically have dispersed from their mother and siblings. Although there are some yearly fluctuations within harvest categories, the average ages, total number killed and number of each sex killed has not changed significantly over past years. Guided hunters comprised of about one-third of all sport hunters and lions killed by these hunters averaged 3.3 years of age. Nevada residents took 38 of the lions through the sport harvest, while non-resident hunters killed 13. Time spent by hunters actively hunting lions is measured by the number of days hunted. The average was 3.2 days/hunter.

Hunters that use hounds to track and tree a lion typically take most lions. Some tag sales are due to hunters who are pursuing other types of game hoping to make an incidental kill of a cougar. These types of lion mortality are usually few each year and there were only 2 incidental sport harvests recorded this season. Additionally, 2 other incidental harvests occurred when a chukar hunter shot 2 juvenile lions when he felt they were going to injure his dog. Most of the cougars killed under authority of a sport tag were taken from December through January when winter conditions favor hound hunting. In fact, there no lions were killed during mid-season (April to September) which is the temporal window for the lion population's birth pulse. It appears that the year-around season has had no effect on total harvest.

Weather conditions did not exactly favor lion hunters this year, with little snow arriving until late in the winter. However, access remained good and consequently overall harvest increased over last year.

Table 4 - Western Region mountain lion sport harvest - sex & age comparisons since 1997.

Season/Year	Harvest		Average Age		
	# Males	# Females	Males	Females	All Lions
1997-1998	21	23	3.8	3.8	3.8
1998-1999	24	18	3.6	3.3	3.5
1999-2000	22	16	4.2	4.4	4.3
2000-2001	39	26	4.5	4.2	4.4
2001-2002	27	18	3.8	3.5	3.8
2002-2003	20	20	4.2	2.8	3.7
2003-2004	18	30	4.1	3.5	4.0
2004-2005	22	11	4.5	3.2	4.1
2005-2006	15	21	3.7	2.6	3.1
2006-2007	25	26	3.7	3.3	3.5

Table 5 – Western Region mountain lion sport harvest – age cohorts.

	Age	Kittens	Dispersal	Prime Adults	Older Adults
Sex	**unknown**	**.5 - 1.5 yrs**	**2 – 4 years**	**4.5 – 7 yrs**	**7.5 yrs +**
F	2	1	18	6	0
M	0	2	17	7	0

Depredation Harvest

The United States Department of Agriculture's Wildlife Services personnel killed 6 lions with a sex ratio of 4 males & 2 females. The average age of these lions was 3.8 and 2.5 years respectively. These cougars were killed under agreement with Wildlife Services and were taken in response to domestic livestock depredation in which a total of 21 sheep were reportedly killed by lions.

All salvageable lion hides from around the state are skinned, dried and sent to the Western Region where they are then sold at the Nevada Trapper's Association's annual fur sale in Fallon. A total of 17 hides were sold this year bringing an average price of $147. Four skulls were also sold at the fur sale, bringing an average of about $29. Unfortunately most skulls from Wildlife Services' killed lions were unsalvageable due to their being shot in the head.

There were 20 cougar complaints this year in the Western Region that required NDOW personnel to spend a total of 7 hours and 46 vehicle miles on investigations. Typically most lion complaints were actually reports of sightings and/or tracks. Very few of these could be confirmed as lions by NDOW. Perhaps many of these reports were a consequence of mistaken identity attributed to either dogs or deer. Advice is almost always given over the phone or by mail in these cases. For cases of domestic pet or livestock loss the caller is referred to Wildlife Services.

Based on past years it is unlikely that regulation changes or quota increases will alter the number of lions killed annually. Certain areas of the western region have been subjected to severe habitat degradation, particularly by urbanization along the Carson Front. It is believed these impacts to deer winter range continue to have adverse effects on local lion populations and dispersal of juvenile mountain lions.

Table 6 – Ten-year Western Region mountain lion harvest trend – all known mortalities.

Season Year	Season Length	Harvest Objectives	Harvest Type			
			Sport	Depredation	Other	Total
1997-1998	212	73	34	9	5	48
1998-1999		88	30	10	2	42
1999-2000	213	90	30	5	3	38
2000-2001	272	86	57	7	1	65
2001-2002	365	100	39	6	2	47
2002-2003	212	114	40	5	3	48
2003-2004	365	114	48	15	3	66
2004-2005		114	33	6	8	47
2005-2006		114	36	10	6	52
2006-2007		114	51	6	8	65

There is nothing in the current harvest data to suggest the lion population is either increasing or decreasing. Rather it is seen as a stable and healthy carnivore population that has remained in balance with the available prey base of northwestern Nevada. However, this is harvest data only and it is therefore recommended that modern technology be utilized to research and monitor the cougar population statewide. This could be accomplished through capturing and radio collaring lions in target areas to determine demographics, and by using DNA sampling. Harvest regulations and quotas should remain static until such time that the supporting science indicates a change is required either direction.

NDOW biologists are currently working with faculty and students at the University of Nevada on a study to determine the population dynamics of lions living along the urban interface associated with the Carson Range. Efforts to capture and mark lions will hopefully begin this autumn.

Eastern Region – Areas 6 – 15
Report by: Russell Woolstenhulme

Harvest Results

As footnoted in Table 1 Unit 079 was recently split into 2 units. That portion west of the Pilot Valley road remains as Unit 079 while the portion east of the Pilot Valley Road to the Utah border has become designated as Unit 091. The interstate cooperative hunt with Utah will now take place in Unit 091 and henceforth the harvest objective of 4 lions for the interstate hunt will be associated with Unit 091.

The Eastern Region sport harvest of mountain lions for the 2006-07 season was 56 animals (Table 7). The sport harvest for the previous year was 59. The 2006-07 sport harvest composition was 38 males and 18 females for a ratio of 2.1 males/female (Table 8). The ratio for the 2005-06 season was 1.7. The average sport harvest for the previous 5 years (2001-2005) was 80 lions. Average sport harvest reported during those same 5 years averaged 51 males and 37 females for a ratio of 1.4 males/female.

The total documented mountain lion harvest for the Eastern Region in 2006-07, including all known causes of take was 74 lions, with a total of 46 males and 29 females being removed from the population.

Ten lions were eradicated as a result of livestock depredation complaints in 2006-07, compared to 6 the previous year. Two of these lions were opportunistically shot by landowners while professional hunters employed by Wildlife Services killed the other 8. In addition, Wildlife Services took 2 lions in association with projects defined within NDOW's Predation Management Program, which has an ongoing deer and elk project in Units 101, 105 & 107 of Elko County. Of these twelve lions, collectively categorized as depredation harvest within Table 7, 6 were males and 6 were females. Depredation harvest for the previous 5 years (2001-2005) averaged 7 lions per year.

Six mountain lions, 2 males and 4 females, were accidentally taken by trapping. Each of these lions was turned over to the Department of Wildlife and all sale-able parts (hide and skull) were sold at the Nevada Trappers Associations annual fur sale.

Table 7. All Eastern Region area group mountain lion mortalities by type for 2006-2007.

Management Area Groups	Harvest Objective	Harvest Type			
		Sport	Depredation	Other	Total
066	*Regional 163*	0	0	0	**0**
061-068		4	0	2	**6**
065		2	0	0	**2**
071-081		11	0	2	**13**
079	4	1	0	0	**1**
101,105,106,107	*Regional 163*	1	3	1	**5**
102,103,104,108		7	3	0	**10**
111/112		7	0	0	**7**
113,114,115		5	2	0	**7**
121		7	1	0	**8**
131-134		0	2	0	**2**
141		1	0	0	**1**
142-145		7	0	1	**8**
151,152,154,155		3	1	0	**4**
Totals:	**167**	**56**	**12**	**6**	**74**

Population Trend

Mountain lion habitat remains in good condition throughout the Eastern Region with an ample prey base and minimal overall loss of habitat due to development activities. Range fires during previous summers converted thousands of acres of deer habitat to vegetation dominated by grasses and annuals in the Eastern Region. Some important deer summer ranges and some key deer winter ranges burned. The future status

and trend of deer herds in the burned areas will have the most significant impact on lion productivity and survivability. Documented mortality in the form of harvest and accidental loss has not exceeded the reproductive/recruitment capabilities of the mountain lion resource. Although harvest objectives for some units had been met under the previous unit-based approach, the collective harvest objective for the Eastern Region has never been achieved.

Lion harvest has been under close scrutiny by sportsmen over the last few years. There is some concern over the quantity and quality of lions within the Eastern Region. A review of statistics within the region indicates that although some members of the sporting public may witness a locally reduced population (e.g., they are seeing fewer lions in there favorite canyon or hunting location), regionally the population is holding up well. Lion populations cannot be monitored by a yearly total of lions harvested. Too many factors such as weather conditions, level of interest and etcetera effect yearly hunting pressure and effort. A more reasonable measure of lion populations is age of harvested animals. Age structure is a good measure of lion populations as over-harvest will result in age structure changes (e.g., number of mature males harvested will drop while number of adult females and sub-adult males increase).

The average age of lions taken by sport hunters was 4.3 and has varied little in the past 10 years (Table 8). The average age of all recorded lion mortalities was 3.9 and includes sport harvest, depredation harvest and other mortalities. The overall sex ratio was 2.1 males/female compared to 1.7 males/female last year. Based on population estimates, sex and age ratios in the harvest, long-term harvest data analysis, and recorded mortality, the overall Eastern Region mountain lion population trend is considered to be stable.

Table 8. Eastern Region mountain lion sport harvest - sex & age comparisons since 1997.

Season Year	Harvest		Average Age		
	# Males	# Females	Males	Females	All Lions
1997-98	71	57	4.1	4.6	4.3
1998-99	51	28	3.8	4.2	4.0
1999-2000	40	21	3.9	3.9	3.9
2000-01	53	47	4.4	4.5	4.5
2001-02	60	38	4.3	4.1	4.3
2002-03	44	22	4.3	4.9	4.5
2003-04	61	54	4.6	4.2	4.4
2004-05	37	22	4.3	3.9	4.1
2005-06	37	22	3.8	3.7	3.8
2006-07	38	18	4.2	3.4	3.9

Table 9. Ten-year Eastern Region mountain lion harvest trend – all known mortalities.

Season Year	Season Length	Harvest Objectives	Harvest Type			
			Sport	Depredation	Other	Total
1997-98	212	130	128	15	2	**145**
1998-99	212	145	79	19	2	**100**
1999-2000	213	137	61	10	3	**74**
2000-01	272	137	100	17	1	**118**
2001-02	365	150	98	7	3	**108**
2002-03	212	167	66	6	3	**75**
2003-04	365	167	115	9	0	**124**
2004-05	365	167	59	10	7	**76**
2005-06	365	167	59	6	5	**70**
2006-07	365	167	56	12	6	**74**
Averages:	**295**	**153**	**82**	**11**	**3**	**96**

Management Conclusions

Hunter interest and participation remained high in the Eastern Region. As usual, the majority of lions were taken in December, January and February. Snow and tracking conditions were poor in many areas of the Eastern Region during the 2006-07 season. The sport harvest objective for the Eastern Region was 167 lions and sport hunters took 56. None of the management unit groups reached sport harvest objectives. A remaining harvest objective of 111 lions was available to hunters in the Eastern Region.

Overall, population trends appear to be stable in the Eastern Region. There are sufficient base populations of lions to allow for adequate reproduction and population maintenance. The dispersal of lions from adjacent mountain ranges with little or no harvest mortality moderate the effects of harvest in more popular areas. The base populations of prey species on which mountain lions depend most heavily (deer) are currently at levels expected to continue to sustain lion populations. Deer populations are currently experiencing a short-term increasing trend in the Region.

Southern Region – Areas 16, 17, 21 – 27

Report by: Mike Scott

Harvest Results

Regional sport harvest for the 2006-2007 consisted of 27 lions compared to 21 lions taken during the 2005-2006 season. Of the total sport harvest of 27 lions, residents took a total of 22. Two regional depredation complaints were received during the 2006-2007 season. Regional depredation complaints have averaged 3.1 per year (range 0 to 9) during the last 10 seasons (1997-2007) (Table 12). One lion was taken by trap.

Table 10. All Southern Region area group mountain lion mortalities by type for 2006-2007.

Management Area Groups	Harvest Objective	Harvest Type			
		Sport	Depredation	Other	Total
161-164	*Regional* 68	5	0	1	**6**
171-173		10	0	0	**10**
211-212		2	0	0	**2**
221-223		1	1	0	**2**
231		1	0	0	**1**
241-245		4	1	0	**5**
251-253		0	0	0	**0**
261-268		2	0	0	**2**
271-272		2	0	0	**2**
Totals:	**68**	**27**	**2**	**1**	**30**

Population Trend

The 2006-2007 Southern Region mountain lion harvest consisted of 14 males and 16 females for a male to female ratio of 0.9. The 5-year average is 1.3 males per female. The average age of lions taken during the 2006-2007 season averaged 4.1 years for males (compared to 4.7 in 2005-2006), and 4.0 years for females (compared to 3.4 in 2005-2006). Number of lions taken and average age increased while male to female ratio decreased compared to the previous year. The total harvest of 30 lions is below the average of 34 over the last 15 seasons (1992-2007). The Southern Region combined harvest was well below the 2006-07 objective of 68.

Table 11. Southern Region mountain lion sport harvest – sex & age comparisons since 1997.

Season/Year	Harvest		Average Age		
	# Males	# Females	Males	Females	All Lions
1997-98	27	20	4.2	4.1	4.1
1998-99	19	15	4.6	4.9	4.7
1999-2000	20	15	4.5	4.2	4.4
2000-01	23	17	5.4	4.8	5.1
2001-02	13	13	4.7	2.8	3.8
2002-03	12	8	4.6	4.5	4.6
2003-04	18	11	4.2	4.9	4.4
2004-05	6	7	5.9	3.6	4.7
2005-06	15	8	4.7	3.4	4.3
2006-07	14	16	4.1	4.0	4.05

Table 12. Ten-year Southern Region mountain lion harvest trend – all known mortalities.

Season Year	Season Length	Harvest Objectives	Harvest Type			
			Sport	Depredation	Other	Total
1997-98	212	80	47	2	0	**49**
1998-99	212	80	35	1	0	**36**
1999-2000	213	60	36	1	0	**37**
2000-01	272	67	39	2	0	**41**
2001-02	365	67	26	9	0	**35**
2002-03	212	68	20	1	0	**21**
2003-04	365	68	29	5	3	**37**
2004-05	365	68	13	0	0	**13**
2005-06	365	68	21	2	0	**23**
2006-07	365	68	27	2	1	**30**
Averages:	**294.6**	**69.4**	**29.3**	**2.5**	**0.4**	**32.2**

Management Conclusions

Many big game populations in the southern region have shown an increasing trend over the past few years. Many small game populations have also shown increases, likely due to increased precipitation over the past few years. Despite occasional gathers, wild horse populations remain at high levels in many areas of the Southern Region, providing a limited alternative source of prey. Mountain lion harvest has shown modest increases over the last few years, which may be a result of increased prey availability. Drier-than-average habitat conditions that currently exist throughout much of the Southern Region may result in lower availability of alternative prey, as small game populations fail to maintain their numbers. While the lion harvest was well distributed throughout the Southern Region, some areas that have historically produced higher numbers of lions, especially Areas 22 and 23, are currently producing limited numbers, while Areas 16 and 17 appear to be on an increasing trend. Although the below average harvest over the past few years has led to the conclusion that the lion population presently exists in lower densities and total numbers, the increasing trend in the harvest indicates that the mountain lion population in the Southern Region is stable to increasing. The total of 30 lions taken during the 2006-2007 season is still slightly below the previous 10-year average of 32.

BLACK BEAR

Western Region
Report by: Carl Lackey

Harvest

The black bear is classified as a game animal in Nevada; however, the state does not currently support a hunting season for this species. Of the states where bear populations exist, only Nevada and Hawaii do not have hunting seasons. The Department is presently drafting a Commission Policy that will guide the agency's management programs. One element of the document will address recreational use of the bear resource.

Bear Management in Western Nevada

This status report contains information for the calendar year 2006. Beginning in 1997, NDOW made significant adjustments in its approach to bear management, particularly with regard to the handling of nuisance complaints. After learning much about bear ecology in Western Nevada through a study undertaken in 1993, biologists recognized an opportunity to gather significant amounts of data about the species while handling animals that were in conflict with humans. This work is focused principally within Management Area 19 along the Carson Range, where human development has overlapped bear habitat.

The Department created a program and procedure that addresses the handling of all human conflict bears. This document essentially discontinued the relocation of nuisance bears beginning in 1997. By 1998 all captured bears were permanently marked with a lip tattoo. Corresponding numbered ear tags were first applied in 1998. Specific data was first recorded in 1997 with a sample size of 5 individuals. Subsequent captures are depicted as follows:

Table 1. Bears captured in the Western Region since 1997.

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
5	17	28	22	35	44	43	69	77	89	429

The data includes recaptures bears previously handled and marked in the same or preceding years.

There has been a remarkable and steady increase of bear complaints in Nevada since the late 1980's. The human intrusion comes in two forms: construction of homes and infrastructure within formerly pristine habitat and an increase in human recreation activities. Some public perceive that bear populations are increasing; however, past studies have shown this not to be the case. Bear populations have been redistributed across the landscape though, with increased densities (number of bears/100 km²) along and within the urban interface. During this same time period bear densities in undeveloped habitat are thought to have decreased.

Under the program and procedure document NDOW personnel have respond to bear complaints consistently. Traps are usually not set unless the human-caused attractant has been removed or exclusionary precautions have been taken. Once a bear is trapped it is tranquilized so that numerous data can be retrieved. These include age, sex and morphological measurements. Biological samples are taking consisting of blood, tooth and hair. After recovery the bear is most often released on-site (point of capture) and subjected to *aversive conditioning*. This involves shooting the bear with non-lethal deterrent rounds and hazing it with trained Karelian Bear Dogs. Since most of the complaints arise from homes situated within prime bear habitat it is not expected that the bears will vacate the area. Consequently, the motive is not to necessarily change the bear's home range but rather to modify the bear's its behavior so that it avoids humans.

Although the data in Figure 1 might easily be interpreted as a depiction that increasing bear numbers are leading to increasing human conflict complaints, there are various reasons why this is not the case. NDOW's "Bear Awareness' campaign, an effort using media and personal presentations to educate people about bear-human conflict avoidance and resolution, has proven to be immensely popular. Media attention has

been profuse, thus people have become apprised of the agency's conflict resolution program. Additionally, bears display a profound ability for adaptive behavior. Data gleaned from captured bears has demonstrated their proclivity to seek out new sources of readily available human-source food once significant proactive human effort has denied such sustenance within their traditional haunts.

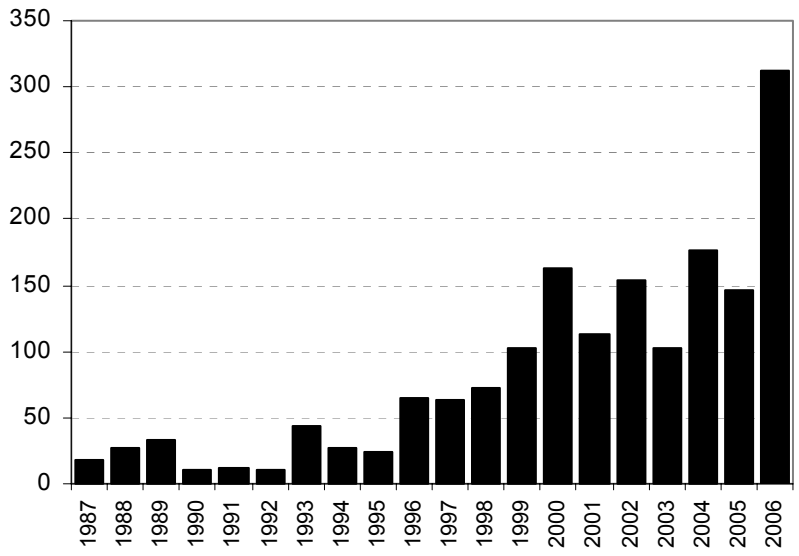
While the Bear Awareness program has well received by the public, the bears themselves have exhibited increased fecundity rates even within diminished home ranges and compacted dispersal patterns. The nuisance bear problem has thus not been overcome rather it is just perpetuated.

NDOW's policy principally avoids the use of euthanasia as a solution to end a human conflict issue. Besides making biological and sociological sense, by not removing adult bears, this approach discourages the immigration of new and *uneducated* bears into an area. Additionally, spatial change in the bear population cannot be expected if attractants are readily available on a daily basis. In most cases, a bear that is captured two or more times has just learned that traps equate to easily acquired food. However, if a bear enters an occupied home then euthanasia becomes an appropriate action to take.

Conflicts & Captures

Bear complaints increased sharply in 2006 and were the highest number ever recorded, both in total number of complaints and man-hours spent. NDOW personnel responded to 312 complaints, consuming 451 hours (56 man-days) of personnel time and the expenditure of 5400 miles. Two important reasons accounted for the increase. First, a digital recorder was used to more efficiently document all complaints in 2006. Therefore, it is likely several complaints in past years were never properly recorded resulting in a less than accurate estimate of time expenditure. Secondly, the spring of 2006 was warmer and milder than the past several years and the ensuing abundance of fruit on backyard fruit trees brought many more bears into conflict with humans.

Figure 1. Western Nevada bear complaints.



Of the 312 total complaints, most were reports of bears getting into garbage only. Following the *Black Bear Program and Procedure*, the usual course of action in these instances is to offer advice on reducing bear conflicts, including proper storage and disposal of garbage. In most cases offering advice was the only action taken. Other common complaints were bears breaking into garbage enclosures or sheds, damage to fruit trees, bears breaking into homes and vehicles and bears frequenting an area. All of these are directly related to the garbage situation, which historically accounts for >95% of the total number of calls received. There were five instances of bears depredating on pets/livestock. Three of these bears were taken by Wildlife Services and two more were killed by NDOW(see *Mortalities*).

Although prevailing climatic conditions have an affect upon bear foraging intensity, bear nuisance complaints predominantly occur in the late summer and early fall (Figure 2). Last autumn there was a notable increase in complaints almost entirely relating to fruit tree crop loss and tree damage. The Tahoe Basin continues to be the area where most bear complaints originate (52%). Carson City accounted for 8%, Reno/Galena – 8% and Carson Valley – 16%. The area extending from Gardnerville to Topaz suffered only six complaints, all late in the year. Other areas of concern continue to be west Washoe Valley and upper Mount Rose Highway around Sky Tavern. Reported damage this year approximated $7,000, mostly attributed to bears breaking screens or tearing molding off of windows. Actual damage is likely much higher given that many people do not report these incidences. Depredations on livestock resulted in the reported loss of $3900.

Figure 2. Western Nevada bear complaints by season.

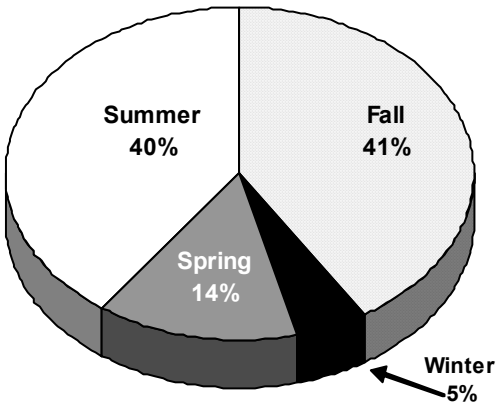


Table 2. Number Sampled, Age Cohort and Sex of all New Bears by Year / With Average Age for Adults

Age cohort	Sex	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Cubs ≤ 12mo.	♂	0	1	3	3	2	2	4	8	7	9
	♀	0	1	2	1	2	5	4	8	3	4
Sub-adults 1 – 3 yrs	♂	1	6	6	7	8	4	4	7	9	8
	♀	2	1	1	2	2	3	5	1	5	6
Adults 4+ yrs / Avg. Age	♂	6 - 9.8	10 - 10	5 - 6	12 - 9.2	5 - 6.4	6 - 8.2	3 - 7	2 - 7.5	2 - 6.5	17 - 6.2
	♀	3 - 7	6 - 9.8	7 - 10	5 - 7.8	5 - 7.8	8 - 9.4	2 - 7.5	6 - 6.5	2 - 11	5 - 7.8

Seventy-two different bears, including recaptures were handled a total of approximately 89 times. These included 24 adult males and 13 adult females. Of these, 50 were new bears, those not previously handled. Of the 50 new bears 27 were tagged and released while 23 were mortalities (unknown bears hit by vehicles, etc). There was one bear of undetermined sex or age. A summary of age cohorts (Table 1) for all new bears handled is: 13 cubs (≤12 months); 14 sub-adults (1 to 3 years); 22 adults (≥ 4 years). Most bears were either caught in culvert traps or by free-ranging capture techniques. The free-range captures were usually in response to requests for assistance from local law enforcement agencies, i.e. a bear in downtown Carson City. Department personnel were summoned on after hour call-outs 33 times on bear complaint issues ranging from bears in homes to roadkills.

NDOW Law Enforcement personnel responded to a complaint of an illegally possessed bear cub near Golconda. Wardens seized the cub and turned it over to the Game Division, which transferred it to Animal Ark where it will remain on a permanent basis. The 6-9 week old female cub had been illegally purchased from an auction house in Missouri through an illegal dealer in Spring Creek.

Mortalities

Of the 32 mortalities recorded this year (Table 3), 9 were known bears (recaptures) and 23 were unknown. Twenty-two were killed as a result of collisions with vehicles. Thirteen of these were in the Tahoe Basin on Hwy 50 and Hwy 28. One bear was hit on 95A near Weeks. Others were killed on Hwy 395 in Washoe Valley, Hwy 431-Mount Rose and Interstate 80. Five bears (all unknown) were killed for depredating on livestock, 3 by Wildlife Services on the Rafter 7 Ranch along the East Walker River. In separate incidences these bears killed 13 sheep at an estimated loss of $3900. NDOW euthanized two depredating bears, 1 in Clear Creek for killing a goat and 1 in Genoa that killed at least 2 sheep. NDOW also had to kill 4 bears in deference to public safety as all were breaking and entering homes and/or vehicles. A private citizen shot 1 bear in defense of property. Anthropogenic reasons, other than legal hunting, are the leading cause of documented bear mortalities in Nevada.

Table 3. Documented Mortalities 2001-2006.

Mortality Type	2001	2002	2003	2004	2005	2006
Hit by Car	6	12	4	9	14	22
Public Safety	1	5	2	3	1	4
Depredation	1	1	0	0	2	5
Poaching	2	0	0	0	0	0
Other	0	2	4	1	0	1
Total	**10**	**20**	**10**	**13**	**17**	**32**
Cumulative Total (since 1997)	**60**	**80**	**90**	**103**	**120**	**152**

Marked Nevada bears killed in California are not recorded in Table 1. There have been five such cases since 2005)

Research

Seven adult bears, 3 males and 4 females, were captured and fitted with GPS collars during the Summer and Fall of 2005. All 4 females have home ranges in the Stateline area of South Lake Tahoe. Home ranges for the male bears are west Carson City, Incline Village and Galena Estates. Dr. Jon Beckmann of the Wildlife Conservation Society provided 5 collars and 2 were donated by Dr. Jon Pigage of the University of Colorado. Nevada Bighorns Unlimited/Reno donated $4,000 to be used for telemetry flights. This was in continuation of NDOW's long-term urban bear study with Dr. Beckmann, now in its 9th year.

Instruments within the collars were designed to acquire several positions from satellites every day, allowing evaluation of movement patterns, landscape preference, and spatial and temporal changes in behavior in relation to humans. The collars were also designed to automatically fall off each bear at a predetermined time on 1 October 2006. Five of these collars were retrieved in 2006 and the data has been downloaded. Two of the collars malfunctioned and remain on the bears. Biologists plan on retrieving these collars in February 2007 while the bears are denning. Analysis of the data from all seven collars will follow. There are plans during the field season of 2007 to fit several more bears with GPS collars provided by the Wildlife Conservation Society. A co-authored publication concerning genetic relatedness of Nevada's urban bears is currently in review.

Summary

Based on data collected from captured bears, and from empirical data by NDOW biologists, Nevada's bear population appears to be at healthy and somewhat stable numbers. Habitat fragmentation and the resulting potential loss of genetic diversity are concerns for Nevada's black bear population. This is exacerbated by the increased mortality rates in urban areas. Historical bear use habitat still supports healthy populations, although at somewhat lower numbers. Unfortunately, the higher densities of bears continue to be in those areas in or adjacent to urban settings. These areas, with the highest concentration of available food, also contain the highest level of anthropogenic related bear mortalities. Much of NDOW's information has been documented within the publication entitled *Nevada's Black Bear – Ecology & Conservation of a Charismatic Carnivore* .